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THE
Gospel of Health

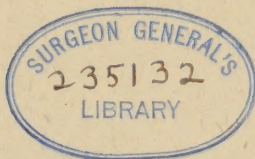
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Healing in all Ages

BY

^{John} ✓
J. W. GILBERT, V. L. D.

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Healing in all Ages

Beloved, I wish above all things that thou mayest prosper and be in health."—Bible.

Man, as he came from the hands of his Creator, required no healing. The product of perfection, he was himself perfect—a fleshly mechanism of the highest earthly order, animated by a force called life, and directed by another force that he began to develop with his first conscious experiences.

Though without any conscious knowledge of the laws of life, he must instinctively obey them when given the opportunity supplied by Eden's garden because he was subconsciously attuned to them. And so long as he should do this, he must continue to live and experience perfect health and happiness.

Fear, sorrow, disease and death began when perfect man was driven from his perfect home because of his wilful disobedience. In the uncultivated earth outside there were only undeveloped foods—wild fruits, the farinaceous seeds of grasses and the herbs of the field; and everywhere those thorns and thistles that were to so increase his labor. Thus overworked and undernourished, it must inevitably follow that his health would fail, and that weakness, disease and death should become his portion and that of all his descendants.

The earliest mention of any attempt at healing the ills of human kind is found in the book of Enoch, an apocryphal book of the Hebrew Scriptures, where we read that "Amazarek," one of a company of angelic beings that visited the earth in the early days, taught men "sorcery and the dividing of roots" (Enoch 8:3). The writer of another apocryphal book tells us that some of the "sons of men" who were thus instructed put their newly acquired knowledge to very evil use. "And some of the sons of men caused their wives to drink a draught that would make them barren" (Jasher 2:18).

The practice of sorcery and the dividing of roots survived the Noachian deluge and became essential elements in the religions of all nations not specially instructed by Jeho-

vah. This came about very naturally. Before the deluge that canopy of "waters above the firmament" had hidden the heavenly constellations from man's view; after the deluge they became for the first time visible from the earth. What more natural than for man to suppose these were the "sons of heaven" who had taught his forefathers in antediluvian days, and to think of them as still influencing the destinies of the human race. Pagan religion, beginning thus in simple star worship, later on developed into mythology.

With the ancient Chaldeans, as well as with later pagan peoples, it was thought that pain and disease were caused by some malign influence of the gods, as a manifestation of their displeasure, or by a demon who entered the body and maltreated the affected part. The remedies for disease naturally consisted of prayers and sacrifices to appease the wrath or gain the aid of the gods and incantations to exorcise the demons. One of the "spells" used by the Chaldeans was as follows:

"On the butter which is brought from a pure stall,
The milk which is brought from a pure sheepoote.
The pure butter of the pure stall, lay a spell,
May the man, the son of his god, recover;
May the man be bright and pure as the butter,
May he be white as this milk."

This "spell" was one of the remedies of the "orthodox" system of medicine of the day, which was accepted by the inhabitants of the world of that day. It was the method accepted by Terah, the father of Abram who later on became the "father" of Jehovah's chosen nation the Jews, and any one who had suggested or attempted to practice any other method would have been called a "crank" and a "quack." The priests of that day were also the physicians, as were, in a later day, the magicians, witches, wizards, charmers and necromancers referred to in Holy Writ.

These ancient beliefs persist in various forms among the pagan inhabitants of the world in our own day, and in modified forms among the least advanced members of

so-called Christian nations, who rub warts with stolen meat and carry horse-chestnuts to ward off rheumatism.

When Jehovah, after calling Abram from the land of the Chaldeans and his own people, established a nation that was to be under His special supervision He also established a "new" religion and a new method of healing, which was rather a method of preventing disease by the observance of certain sanitary and dietetic laws revealed unto them through the great law-giver Moses. By these laws they were to live and retain their health. And having thus provided for them, Jehovah forbade them engaging in any of the practices of those nations not under His care, saying to them in one of the laws He had given them, "There shall not be found among you any one that useth divination, or an observer of times, or an enchanter, or a witch, or a charmer, or a consulter with familiar spirits, or a wizard, or a necromancer. For all that do these things are an abomination unto the Lord" (Deut. 18:10, 12). Through the prophet Isaiah Jehovah adds: "Should not a people seek unto their God?" (Isaiah 8:12).

This was, indeed, only reasonable. The pagans sought unto their own gods and had no faith in the God of Israel. The Jew should have equal faith in the supremacy of his God; and having been given the laws of life and health by the Creator of all life, he could have no occasion to seek elsewhere for healing. But history proves that Israel was a continually rebellious nation. From their entrance into the land of promise until the final destruction of Jerusalem the magical rites of surrounding nations were secretly practiced by Jews of high and low degree. In the course of time these mystical philosophies, especially those of Chaldea and Babylonia, became so incorporated with Judaism as to form a part of that addition to the Law known as the Talmud.

The Talmud is an "explanation" of the Law, written by the Rabbis and accepted in place of the Law by the sect of the Pharisees. The magical formulæ and art of spirit control are contained in that portion of the Talmud called the Cabala. The Cabala, it is said, contains the knowledge of the occult that Jehovah gave to Moses at the burning bush, from the pillar of fire, and on Sinai, and by which Moses was enabled to work such wonders in Egypt. Accord-

ing to the Rabbis, this knowledge, which was not for the common people, was handed down by word of mouth, through Joshua, the Elders, Judges and Kings, to the Prophets—who, of course, passed it on to the Kabbalist Rabbim.

According to the Cabala, from which we get our word "Cabalistic," every word, letter, number, and accent of the Law contains a mystery; and each of the Psalms, and certain other portions of the Hebrew Scriptures, are possessed of magical properties. According to the Cabala headache and backache may be cured by anointing with olive oil while repeating the Third Psalm, dangerous fevers by praying the 49th and 50th Psalms, and the most severe eye troubles by repeating the 13th Psalm while thinking the "powerful name Essiel." Other Psalms give a man power over his enemies, enable him to secure the love and esteem of his fellows, quickly sober him when he is intoxicated, bring him luck, enable him to readily escape from prison, drive out evil spirits, etc. The 91st Psalm is a veritable cure-all when repeated seven times a day and "connecting with it in the mind the figure of the golden candlestick composed of the forty-one holy and important words and names of this Psalm."

While the Talmud, in general, professes to forbid sorcery and "heathen usages" it established a system of its own that was an excellent imitation and satisfactory substitute. While forbidding the use of the egg of a grasshopper suspended in the ear to cure earache, it recommends the following charm for boils and abscesses: "Bas, Basi, Mas, Masia, Kas, Kasia, Scharial and Amarlia, the angels who came out of the land of Sodom to heal painful boils. Let the color not become redder, let it not spread further, let the seed be absorbed in the bowels. And as a mule does not propagate his species, so may this evil be not propagated in the body of (name of sufferer) son of (name of father)."

One of the Talmudic writers declares: "To drink one-eighth ounce of ass's milk which is forty days old, is effective against the sting of a wasp; one quart against the sting of a scorpion; one-half quart against sorcery." Another writes: "A chief among witches told me if you meet witches you should utter the following: 'Hot dirt, in per-

forated baskets, in your mouths, ye enchanting women. May your heads become bald; may the wind blow away your bread crumbs; may it scatter your spices; may the fresh saffron which ye have in your hands fly away.' ”

According to the Talmud snake bite may be cured as follows: “If a man be bitten by a snake, let him take seventy-nine hairs from the tail of a white she-ass, free from the disease Trefa, and he that is bitten sit upon them.” To cure “daily fever” “take a new coin and a piece of salt of equal weight, and carry both over the pit of the heart, attached to a string.”

Abraham, Moses, Solomon and the Prophets were looked upon by the Kabalist as the chief magicians of their nation. A writer in the Talmud says: “God hung a precious stone around the neck of Abraham, and all that were sick and gazed thereon became well. But after Abraham died, God took the precious stone and hung it in the sphere of the sun.” Moses’ rod was looked upon as a magical wand by the aid of which, in conjunction with certain mystical spells that gave him command of the spirits of earth, air, fire and water, he was enabled to work the many wonders that he performed. Concerning Solomon’s knowledge of magic we have the testimony of Josephus, who writes: “I was an eye-witness to a cure which the prophet Eleazer, in the presence of the Emperor Vespasian, performed upon a man possessed of demons. He made use of a root recommended by King Solomon as being effectual against demoniacal disease, when the root was inserted into the nose of the patient, at the same time pronouncing the name of Solomon and the magical formula which this king taught.” According to Mohammed, Solomon was given the reputation of being a sorcerer by the evil spirits, who sought to revenge themselves by concealing all kinds of magical books under his throne after his death. However the thought may have originated, history shows it to have been held by a great number of the Jewish people in the days of our Lord. He, it would seem, laid the blame upon the Scribes and Pharisees, whom He so severely rebuked upon many occasions.

Many learned people believe that the “sons of heaven” spoken of in the Book of Enoch were the “sons of God” referred to in Genesis 6:1, 2 as ruling the earth in the

days before the deluge and unlawfully mating with the "daughters of men," and that their semi-human offspring were the living originals of the earliest gods of ancient pagan religions. This thought harmonizes well with the mythologies. In every system of mythology the gods are spoken of as having at one time dwelt upon the earth, and in every system of mythology there is reference to a great deluge, after which the gods are looked upon as residents of heaven, being identified with the heavenly constellations. The Emperors of China have always claimed to be descendants from the "celestial kings who ruled the earth for eighteen thousand years" prior to the time it was first ruled by man. Therefore the Chinese Emperor has always been called "The Son of Heaven."

We also find that every ancient people had a god of healing, who was said to have transmitted his power and knowledge to a human son who became the father of all physicians in that nation. Marduk, the Merodach of the Hebrew Scriptures, was the god of healing to the Chaldeans and Babylonians. In his stellar character, Marduk is the planet Jupiter. In Greek mythology Jupiter, Jove, or Zeus, was the god of recipes and the father of many gods. One of his sons, Apollo, was the Greek god of medicine. Apollo was a "son of heaven" who married one of the "daughters of men" named Coronis. A son named Aesculpius, to whom Apollo taught the healing art, was the result of this union. In Hindoo mythology this son is named Dhanwantra.

An Egyptian physician, calling himself Aesculpius, and claiming to be the son of Apollo and Coronis, came to Greece in the very early days. He is represented as wearing a large beard and holding in his hand a knotty staff round which is entwined a serpent. He was worshipped particularly at Epidaurus, where a temple with a grove was dedicated to him. The sick person spent one or more nights in the sanctuary, after which the remedies to be used were revealed in a dream. Those who were cured offered a sacrifice to Aesculpius, usually a cock.

Hygeia was the daughter of Aesculpius and was worshipped as the goddess of health. Zeus, the Jupiter of the Romans and king of all the gods, was worshipped as the god of recipes. Diana, the Artemis of the Greeks and twin sister of Apollo, was appealed to by Roman women in child-

birth, while Mercury, the Hermes of the Greeks and the son of Jupiter, was appealed to for the healing of skin diseases. The influence of these ancient gods and goddesses is still felt, in our use of the word Hygiene, in the fact that our medical men still call themselves disciples of Aesculpius and head their every prescription with the illy drawn astrological symbol "R," the sign of the god of recipes. The doctor's cane and beard, only recently gone into disuse, were undoubted relics of the serpent twined staff and beard of Aesculpius; and Quick Silver, that mineral element so long looked upon as the physicians strongest weapon against disease, was named Mercury, in honor of that god who was also called "the prince of thieves." In the form of Calomel Mercury has long been used for Typhoid and Malarial fevers, and in biliousness Mercurial purgatives have been a favorite remedy, the old familiar Blue Mass being employed. The Chloride and Iodide of Mercury are still considered a specific for venereal diseases.

To observant and thinking men in the slowly evolving pagan civilizations there came a gradual realization of factors in disease that could not be attributed to the anger of the gods or the maliciousness of demons. The dream-prescribed remedies, in the course of time, also provided material for a crude *Materia Medica* for the thinker who should first realize its possibilities. This "secular" knowledge seems to have advanced most rapidly in Greece. As early as the twelfth century before Christ there was a man of Thessaly named Chiron who practiced the healing art as a profession separate from the priesthood. Fact and fable are so blended in the history of his day that it is difficult to secure much reliable information concerning him, but it seems evident that he employed a few simple medicines and possessed some knowledge of reducing fractures and dressing wounds. But knowledge increased slowly, even in Greece. It was six centuries later than Pherecydes, a Greek philosopher, wrote a book on diet, and his disciple, Phythagoras, dissected animals for the first time. This paved the way for the first dissection of a human body, made by Heraclitus, a Greek philosopher of Ephesus, in 513 B. C. Heraclitus considered fire the first principle of all things, describing it as "self-kindled and self-extinguished." The

world had to wait another hundred years for its first orderly arranged system of drug medication. This work was accomplished in the century that produced Plato, Socrates and Herodotus, by a Greek physician named Hippocrates.

Hippocrates was one of the first to insist on the importance of diet in the treatment of disease. His many writings became the nucleus of a collection of medical authors of different places and periods. He claimed to be a descendant of Aesculpius, thus intimating that he had received his knowledge of healing indirectly from the very god of medicine himself. The modern medical man might, therefore, reasonably look upon his art as a gift handed down from the gods since he calls Hippocrates the "father of medicine."

The new "science" of medicine was not introduced in Rome until about B. C. 33, when Archagathus, a Greek physician, settled there. His theory was that disease could be cured only by burning or gouging out the diseased part. He was banished from Rome within a year or two.

That the Roman people were slow to abandon the older method of healing by prayer and sacrifice to the gods is proven by the experience of two Christian disciples several centuries after Archagathus was driven from the seven hilled city. When Paul and Barnabbas healed the cripple of Lystria the populace, headed by the priests, cried: "The gods are come down to us in the likeness of men. And they called Barnabbas Jupiter, and Paul Mercurius" (Acts 14: 11-13).

The advent of Christianity brought a measure of increased light. The temperate living of the Christian disciples brought to light many health truths that were doubtless noted and appropriated by the observant physician outside the church. Galen was the most famous of these in the second century of the Christian era. He was the first to establish the consultation of the pulse in the diagnosis of disease.

With the establishment of Christianity, however, the treatment of disease came again to be almost altogether in the hands of the priesthood. Thus was the existing light of drug medication eclipsed and further progress halted for the time. For pagan literature and learning was con-

demned by the church and all physical science held in contempt as inconsistent with revealed truth.

With these prohibitions of the church and the destruction of pagan literature by the hordes of illiterate barbarians during the last days of the Roman civilization, the world entered the evening of that dark night of ignorance and superstition that was to last for more than a thousand years. The establishment of Monastic orders in the fifth century helped increase the darkness by drawing the thinking, serious part of mankind from the pursuit of secular knowledge to the melancholy meditations of the cloister. The corruption, and final displacement of the spoken language of the day by the Teuton dialects of the barbarian invaders also played its part. For the world's secular knowledge had been written in the Greek and Latin tongues, and when these ceased to be living languages none but the very learned in the church had access to it; and those within the church were forbidden to read these secular writings. The scarcity of papyrus for the writing of books was a contributing cause of the universal ignorance of the "Dark Ages." The Saracens stopped the importation of this material from Egypt early in the seventh century and it was not resumed until near the close of the eleventh, about which time the art of making paper from cotton rags was discovered. The knowledge gained in past ages was not altogether lost however. The Latin tongue was preserved in the liturgy of the church of Rome, and the monasteries safely sheltered all the ancient writings that had not been destroyed by the invaders. Much remained, too, in the keeping of those nations of the East that had not embraced Christianity.

Healing remained in the hands of an ignorant priesthood until constantly increasing abuses led to the Decree of the Council of Tours, 1163 A. D., which prohibited deacons and priests from performing surgical operations. Seventy-five years later a medical school was established at Padua, in Italy, and medicine once more began to be a profession separate from religion. The new practitioners, however, were of a very low order and their ignorance and inefficiency became so plainly manifest that drug medication fell into disrepute and the people turned again to amulets and charms and the magical potions of professed magicians and "healers."

Closely following the religious reformation instituted by Martin Luther in 1517 came an attempt to reform the practice of medicine in England by Dr. Linacre, who founded the Royal College of Physicians in London in the year 1518. The newly discovered art of printing from movable types materially assisted each of these reforms, and the world slowly, but surely, began to emerge from its long night of ignorance and superstition.

Medical progress was slow in the centuries that followed the Reformation. It was 110 years later that Harvey discovered the true theory of the circulation of the blood, and fifty-one years after this that Sydenham, an English physician, studied the phenomena, or symptoms, of disease. Twenty years later, 1698 A. D., Boerhave, a Dutch physician, made a classification of diseases. Throughout the eighteenth century it was held that disease was to be overcome only by bleeding, burning and the administration of the most nauseous decoctions. Louis XIV was bled nine times for scarlet fever, and George Washington, in his last illness, was relieved of ninety ounces of blood and given sixty grains of Calomel (Mercury) all within the short space of twelve hours.

In those "almost modern" days snails, taken from the shell and soaked in white wine, were considered a cure for coughs, colds and "tightness" on the chest. Roasted mouse was prescribed for nervousness, and a cure for hypochondria was made of adders, bats, angleworms, sucking whelps, ox bones and hog grease. Calomel, sugar of lead and pulverized human bones were given for gout.

Certain herbs were thought to possess mystic powers, imparted to them by particular constellations, the outward sign of their medicinal virtue being found in the shape or color of the herb. Red objects were supposed to exert a mystic influence upon inflammatory diseases and yellow ones on jaundice. Air and water were considered the most dangerous things a sick person could have. Night air was especially harmful, even for those in health. The rules for personal cleanliness were: "Hands often feet seldom, head never."

The last medical "discovery" of the eighteenth century resulted in the introduction of vaccination for smallpox, the forerunner of all serum therapy. This "discovery" was

really made in the cow stalls of England, by the farmhands of Gloucestershire, among whom the belief was common that the casual cow-pox acquired in milking cows was a preventive of smallpox. In the year 1776 Dr. Edward Jenner, who had just settled in that part of England, turned his attention to the subject and, after experimentation, introduced vaccination.

With the coming of the century that brought the locomotive, telegraph, electric light, and telephone, there came also increased light on the subject of health and disease. Men had long been dissatisfied with the existing "orthodox" method of treating disease, and the medical men themselves realized its inefficiency. It remained for one of their number named Hahnemann to make an effort at reform.

Hahnemann, who graduated as an "orthodox" physician in 1779, established a new school of drug medication called Homeopathy in the year 1810. The Allopathic, or old school, treated disease with remedies producing effects opposite to the symptoms, the new school was to employ remedies producing results similar to the malady. Since the "house" divided against itself must eventually fall, this division in the "house" of drug medication may well be taken as having marked the real beginning of the time of its end. For when thinking men observed that these opposing methods were equally successful in their "cures" they were led to question the power of any drug to repair the human body.

This incentive to seek a greater knowledge of the causes and cure of disease was wonderfully strengthened in the year 1825 when man was given his first opportunity of witnessing the processes of digestion in a living stomach. The case of Alexis St. Martin, the owner of the stomach, is known as the most extraordinary in the annals of surgery. He was a French Canadian in the employ of the American Fur Company in Canada, who accidentally received a gunshot wound in the stomach that left an aperture about two inches in diameter. St. Martin lived to a ripe old age, but this orifice never healed; and through it all the processes of digestion were plainly visible to Dr. Beaumont, the surgeon who attended him. Doctor Beaumont made numerous experiments with all varieties of food and drink, and a few years later gave the medical world its first positive knowledge concerning the human stomach and its digestive functions.

Doctor Beaumont's discoveries seem to have marked the real beginning of a movement to educate the general public along the lines of health. Following his "Physiology and Experiments," came a little book for the general public published by Dr. Andrew Combe in 1836. Doctor Combe's "Digestion and Dietetics" called attention to the fact that what we eat has much to do with the condition of our health. This was followed, in 1838, by the beginning of a series of popular lectures on Physiology and Hygiene delivered by Dr. Albert J. Bellows. Doctor Bellows continued lecturing on these subjects until 1858, and in 1871 he had published two books, "How Not To Be Sick" and "The Philosophy of Eating." About the same time Doctor Dio Lewis, of Boston, Mass., published a popular treatise on digestion, and two years later there appeared an "Expose" of medical practices and patent medicines, written by A. D. Crabtree, M.D. In the following year, 1874, Dr. Andrew Taylor Still, a medical man who had practiced much among the Shawnee Indians, founded the first successful school of drugless healing, which he named "Osteopathy." Osteopathy is now generally recognized as the third great system of healing.

Since the year 1874 the light of health knowledge has been shining ever brighter. The first monthly health magazine for the general public was born in 1895, and has since been followed by many others. In 1906 the first Pure Food and Drug laws were enacted in the United States. A multitude of sanitary regulations have followed; the prohibition of the public drinking cup, anti-spitting laws, and many others. "Clean-up Week" has become an annual institution in the larger cities, and every newspaper and magazine of any consequence, and some of no consequence, now has its regular "Health Department" or publishes occasional articles on health subjects.

Many members of the medical profession have entirely abandoned the use of drugs and are in the front ranks of the reformers successfully treating disease by natural methods. Their less progressive brethren now give as few drugs as their still unenlightened patients will permit or have abandoned drugs in favor of serums and the vaccine point.

Since 1914 the need of knowing and obeying the laws of health has been brought to the attention of all people as never before. The demand for millions of physically fit

fighting men created by the world war found the majority of mankind in all the warring nations far below the military standard. Only by intensive training have the unprepared nations succeeded in raising their armies, and this training has worked such wonders in the physical condition of the formerly unfit as to awaken all to the efficacy of natural methods. The war has done much more than this, along the same lines, for it is proving the health value of abstinence from alcohol, and making public the formerly hidden dangers of the social disease. The prohibition of alcoholic beverages will soon be an accomplished fact in all the warring nations, and the United States Government is even now preparing to spend some two millions of dollars per year in educating the public in social hygiene. Steps are also being taken toward compulsory physical training of our civilian population.

We have traced the course of healing throughout the ages from the antediluvian world to the present day; and now what of the near future, in that new era which all agree is dawning? What further progress shall we make toward the attainment of the life, liberty and happiness that should be the inalienable right of all people? Our statesmen assure us that when this war has ended the light of liberty will have spread to all the earth, making it a better place to live in; the inventor tells us that we shall have wireless telephony, aerial transportation, and many other marvels that will lighten our labors and increase our joys; the scientist informs us that we shall have more perfect foods and better sanitation, that every contagious disease will be eradicated and the span of human life wonderfully lengthened; but the greatest and most wonderful hope of all is the one held out by certain students of the Hebrew and Christian Scriptures, who are publicly declaring that millions of persons now living will never die at all. Since our present theme is neither theology or politics we must present these various promises for the future simply as parts of current history. Time will prove their truth or falsity. We do know, however, that the world has already learned many things that are going to vastly improve conditions, and we must admit that we are at least nearer than ever before to that time when the "old man shall renew his youth," and when there shall be "no more death, neither sorrow, nor crying, or pain."

No one school of healing has all the knowledge of the laws of life, health and happiness now available. But all schools have some of these truths, and it naturally follows that by taking the truths of each and dovetailing them one into the other we shall possess all the light now shining. To this end we devote the chapters that follow, seeking therein to present, in plain, simple, concise form, those health truths most needed by the greatest number of persons.

The Gospel of Health

CHAPTER ONE

MAN

"What is man, that thou art mindful of him? Thou hast made him a little lower than the angels."—Psalms 8:4.

Man is the highest type of earthly animal; a fleshly mechanism operated by a force called "life" and directed by a force called "mind." Though of a lower order of being than angels, he is possessed of a power not possessed by them, the god-like ability to bring into existence beings in his own image and after his own likeness.

When we examine any portion of the developed human body under the microscope, we see that it is made up of structural units called "cells," small semi-fluid or semi-solid dense bodies, composed of albumen, in which another, smaller, and generally more solid body called the "nucleus" is enclosed. These "cells" are the "building blocks" used by the Master Builder in forming the bodies of every complex earthly plant or animal.

Man is developed from a single "cell." A tiny speck of living protoplasm that, coming in contact with another, dissimilar human "cell," merges with it to reproduce its kind. From the wedding of these cells results that innumerable family of "cells" that are built up into that complex organism called the human body.

The body thus built is supported, protected and held in shape by a framework of some 206 bones; its various parts are connected and moved by a system of 400 bundles of fleshy fibres called "muscles," which constitute the "flesh," or "lean meat;" its every part and organ is supplied with nourishment and relieved of its worn-out particles by the blood, which flows through a series of elastic canals called arteries and veins; and each organ and part is connected by an elaborate fleshy "telegraphic" system called the "nerves."

There are said to be more than ten million of these fleshy telegraph wires, and their sole function is to transmit nervous force and impressions. Over some of them is sent the current of vital energy by which the many fleshy "machines" are run; over others the messages that inform the brain of internal and external conditions.

The outside of man's body is covered by some seventeen thousand square inches of fleshy substance called "skin," which is from one-fourth to one-eighth of an inch in thickness, and consists of three layers. Each square inch of this covering contains 3500 openings called "pores," the mouths of the body's twenty-eight miles of "sweat tubes," through which passes, in the form of insensible perspiration, more than three barrels of water during the course of a year.

There are about ten quarts of blood in the ordinarily healthy human body. All of this blood is pumped through the body's 970 miles of blood vessels once every four minutes by the heart, a hollow muscular organ six inches in length and four inches in diameter that holds two and a half ounces of blood at one time.

The heart is said to exert a force of 100,000 pounds at each contraction. It beats seventy times a minute, 4200 times an hour, 100,800 times a day, and 36,722,000 times a year. In three score years and ten it will beat 2,566,440,000 times. Two and a half ounces of blood are driven from it at each pulsation, 175 ounces per minute, 656 pounds per hour, more than seven tons every day.

During the course of a year the salivary glands manufacture and use about four barrels of saliva, the stomach about five barrels of gastric juice, the liver about three barrels of bile, and the kidneys more than eight barrels of urine. Other organs and glands secrete, altogether, another two barrels of various fluids. Including the water that passes through the pores, and the lungs, there is a grand total of some 776 gallons, or more than 24 barrels of liquids discharged from the body in the course of a year. In the seventy years allotted to mankind this would amount to a grand total of fifty-four thousand, three hundred and twenty gallons.

But this is not all, by any means. The moderate eater will consume about two and a half pounds of food per day. This amounts to 912½ pounds per year, and to 63,840 pounds

in three score years and ten. More than thirty-one tons of semi-solid substance, all of which has entered the body, and nearly all of which has passed from it. What a monster the man who died at the age of seventy would be if he were to be recreated of the substance that had during his first life-time been a part of his body!

Shakespeare tells us that "one man, in his time, plays many parts," and scientific investigation proves to us that he has "many" bodies in which to play them. For the fleshy mechanism designed and built by God, unlike the ones of iron and steel designed and built by man, has the power to renew its substance as it becomes worn out; and with every movement of the body or any of its parts there is a loss, a wearing out or using up of substance. Many thousands of brain cells are burned up with every thought, thousands of heart cells with every one of the 100,800 daily pulsations of that organ, and other thousands with every movement of the organs of which they are a part. Even the bones are constantly wearing out and being renewed, but much less rapidly than the fleshy parts of the organism. The fleshy parts of the body are renewed once every year, but the bones are renewed only once in seven years.

The weakest organ of the body, tested as iron and steel are tested, exhibits a tensile strength sufficient to enable it to perform its normal work for at least one hundred years. Yet only one person in every ten thousand reaches the century mark, only one in five hundred lives to be ninety, and only one in one hundred to the age of sixty.

Among the lower animals, those who suckle their young live about five times the length of their growing period. The horse, full grown at five, lives twenty-five years, sheep, full grown at the age of three, live fifteen years. According to the Mosaic law, man was not of "age" until thirty, and the latest scientific researches indicate that man does not reach his limit of growth until his thirtieth year. Man, therefore, should attain an age of one hundred and fifty years.

In Ireland, it is said, about one man of every eleven reaches the age of three score and ten; in France, about one in every eight; in the United States, one of every four; in England, almost one of every four; in Norway, more than one of every three.

The length of the spine is understood to have much to do with longevity. In a large, long body the vital organs are more perfectly developed and act more freely. Married men, and women, usually live longer than single ones, but unmarried women, as a rule, live longer than unmarried men. Doctors of Divinity live longer than doctors of medicine.

In the United States some 13,400,000 persons are sick on an average of eight and a half days every year. The social and economic cost, including lost wages, doctors' bills, nursing and medicines, is \$772,892,860. During the same period nearly seventy-five millions of dollars are spent for patent medicines, and more than ten billions of dollars wasted by carelessness and extravagance in the purchase, preparation and consumption of foodstuffs.

Of the estimated more than 1,500,000,000 human inhabitants of the earth, some thirty-three and a quarter millions die every year, more than ninety-one thousand every day, or about sixty-two every minute. This is offset by the birth of some seventy-two new human beings every sixty seconds.

The average height of the new-born babe, male or female, is about sixteen inches. If a male, its weight is about seven pounds; if a female, about six and a half pounds. The weight decreases after birth, but begins to increase by the end of the first week. At the end of the first year the child will be about three times as heavy as when born. The weight of both sexes averages the same up to the twelfth year, after which the female will weigh less than the male. The female usually reaches her maximum weight at fifty, the male about forty. Both sexes usually begin to lose weight at the age of sixty.

From twenty to thirty cubic inches of air are taken into the lungs at each inspiration, and about the same amount of vitiated air expelled.

A man's beard will grow about twenty-seven feet during fifty years; a woman will have been the proud possessor of some fifty-seven miles of hair in the same period of time.

In fifty years we grow about seven feet of toe-nails and some twenty-eight feet of finger-nails.

A French statistician tells us that a man of fifty years has slept 6000 days, worked 6500 days, walked 800 days,

amused himself 4000 days, was eating 1500 days, was sick 500 days. During his fifty years he has eaten 17,000 pounds of bread, 16,000 pounds of meat, 4600 pounds of vegetables, eggs and fish, and drank 7000 gallons of liquid, water, coffee, tea, beer, wine, etc. The liquids he has swallowed would make a lake of 300 square feet surface and three feet deep.

Man, in his babyhood, is the most helpless of all earthly animals, but having safely passed this period he is above all others. John Burroughs, in the *Atlantic Monthly*, had this to say of him some time ago:

“Man has no wings, and yet he can soar above the clouds; he is not swift of foot, and yet he can outspeed the fleetest horse or hound; he has but feeble weapons in his organization, and yet he can slay or master all the great beasts; his eye is not so sharp as that of the eagle or the vulture, and yet he can see into the farthest depths of sidereal space; he has only very feeble occult powers of communication with his fellows, and yet he can talk around the world and send his voice across mountains and deserts; his hands are weak things beside a lion’s paw or an elephant’s trunk, and yet he can move mountains and stay rivers and set bounds to the wildest seas. His dog can out-smell him and outrun him, and yet his dog looks up to him as to a god. He has erring reason in place of unerring instinct, and yet he has changed the face of the planet.

“Without the specialization of the lower animals—their wonderful adaptation to particular ends—their tools, their weapons, their strength, their speed, man yet makes them all his servants. His brain is more than a match for all the special advantages nature has given them. The one gift of reason makes him supreme in the world.”

“For thou hast made him a little lower than the angels, and hast crowned him with glory and honor. Thou madest him to have dominion over the works of thy hands; thou hast put all things under his feet.”—Psalm 8:5, 6.

CHAPTER TWO

STAR DUST

"And the Lord God formed man of the dust of the ground."—*Genesis 2:7.*

Star dust! Precisely. For we are made of exactly the same material as this little star we call the "earth." The Bible says so, and science confirms the statement, chemical analysis showing a human body of 150 pounds weight to be composed of the following elements, in the proportions given.

	Pounds.	Ounces.	Grains.
Oxygen	97	12	.....
Carbon	30	.....	.....
Hydrogen	14	10	.....
Nitrogen	2	14	.....
Calcium	2	.....	.....
Phosphorus	1	12	190
Sulphur .....	.....	3	270
Chlorine .....	.....	2	250
Fluorine .....	.....	2	215
Sodium .....	.....	2	196
Potassium .....	.....	.....	290
Magnesium .....	.....	.....	340
Iron .....	.....	.....	180
Silicon .....	.....	.....	116

Curious Chemical Facts

All the constituents of a 150 pound man are contained in 1.200 eggs.

There is enough gas in a man to fill a gasometer of 3640 cubic feet.

There is enough phosphorus in a man to make 8064 boxes of matches; enough fat to make 75 candles and a large cake of soap.

Other constituents would yield, if utilized, six cruets of salt, a bowl of sugar and ten gallons of water.

Proximate Principles in the Body

The "ultimate" elements shown in the table are vari-

ously combined in the human body, to form its bony structure, tissues and juices, as follows:

Oxygen and hydrogen combine to form water, which is present in every tissue, varying from 99% in saliva, 80% in blood, 75% in muscle, 2% in enamel of the teeth.

Water aids in the absorption of needed material and the elimination of waste products. It holds in solution both organic and inorganic compounds.

Carbon, hydrogen and oxygen combine to form body fats. *

Carbon, hydrogen, nitrogen and oxygen combine to form gelatine, of which the walls of the cells, and many tissues of the body are composed.

Nitrogen combines with sulphur, carbon, hydrogen and oxygen to form albumen, found in the blood, and in nearly every organ, and to form fibrine, the basis of muscles and solid tissues.

Phosphorus combines with sodium and oxygen, and with potassium and oxygen, to form the phosphates of soda and potash, found in the brain and nerves.

Calcium, the metallic base of lime, combines with carbon, sulphur and oxygen to form carbonate of lime, a part of the composition of bones.

Flourine, combines with oxygen and calcium to form fluoride of calcium, found in small quantities in the bones.

Sulphur, combined with oxygen and carbon, and with oxygen and potash, in the blood.

Chlorine, with sodium, is found in the blood.

Iron combines with oxygen, and with organic compounds. It constitutes the coloring matter of the blood. Traces of iron are found in the lymph, bile, gastric juice and pigment of the eye, in the heart, and in the skin.

Magnesium combines with oxygen and phosphorus to form phosphate of magnesia, found with phosphate of lime, in the bones.

Sodium, in combination with oxygen, is present in all tissues and fluids of the body, and influences its nutritive processes. It is combined with hydrogen and carbon in the gastric juice, and with potassium and oxygen is present in all tissues and fluids, and imparts an alkaline reaction.

Silicon, the base of silex, which is found in the hair, teeth and nails.

The above combinations, and many intermediate ones, are continually being formed within the body from the ultimate elements contained in the air we breathe, the water we drink, and the food we eat; and the substances thus formed are as continually being torn down and their elements being formed into new combinations, carbonic-acid gas, urea, etc. These constitute what are commonly called the "waste" materials of the body, and are expelled by way of the lungs, pores, bladder and rectum. The importance of keeping the body free of this waste matter is emphasized by the fact that it is provided with twice as many exits as entrances.

From Dust to Dust

The substances formed of "dust" are torn down and destroyed, but the elementary atoms of which they are composed are indestructible. They are from everlasting to everlasting, and are used over and over again in the building of innumerable animal and vegetable bodies. From earth to plant, through plant to animal, they rise; and from animal, through plant, they return to earth again.

The "dust" of which we are composed belongs to none of us, though loaned to all. Having used it, we must return it whence it came. That which now forms your body has formed many previous bodies, both animal and vegetable, and will form many, many more.

"The dust that once was Cæsar's royal heart,
Today may dwell within a beggar's breast.
Of dove, or swine, it may have formed a part;
It may within a lily petal rest."

CHAPTER THREE

THE BREATH OF LIFE

"And breathed into his nostrils the breath of life"—
Genesis.

Earth is completely enveloped by a mixture of gases, called the atmosphere, which extend from its surface to a height of about forty-five miles and exert a pressure upon the earth's surface of about fifteen pounds per square inch. The surface of a human body of average size measures about 2000 square inches. Such a body, therefore, sustains a pressure of 30,000 pounds, or fifteen tons, which being exerted equally in all directions causes no inconvenience.

Pure atmosphere is a mixture, not a compound, of oxygen, nitrogen, a variable quantity of watery vapor, and ozone; as contaminated by animal life, it contains also carbonic acid gas and traces of ammonia, in suburban districts, and, in towns, sulphuretted hydrogen and sulphurous acid gas. After thunder storms nitric acid is observable in the atmosphere.

Atmospheric air is the breath of animal life because of the presence of oxygen, a tasteless, colorless, odorless gas that forms one-fifth part of its substance. Oxygen is the chief agent of combustion; all processes of respiration are carried on through its agency, and all ordinary processes of burning are possible only in its presence. Oxygen constitutes eight-ninths of water, three-quarters of all organized bodies, and about one-half the crust of the globe. It is the chief constituent of the blood of animals, as absorbed oxygen or as carbon dioxide, or as compounds of these with proteid and mineral substances.

Oxygen combines more readily with carbon than with any other element, forming carbon dioxide, or carbonic acid gas. Combined with nitrogen it is the breath of life to all animal bodies, but combined with carbon it becomes a veritable "breath of death" to them, soon causing death by asphyxiation if inhaled even in small quantities. But in this form it becomes the breath of life to all vegetable bodies, which inhale carbonic acid gas and exhale oxygen.

The object of animal breathing is to supply oxygen to

the blood and tissues for the purpose of generating heat and energy by the burning of carbon-containing substances, and to rid the body of the carbon dioxide produced by this burning. This process is called oxidation, and is the underlying process of all living functions.

At each breath we take some oxygen from the air and return some carbon dioxide to it. Therefore the atmosphere about a living animal must be constantly renewed or it will die of oxygen starvation—suffocate. Hence the necessity for properly ventilating rooms and buildings; a ventilation that will provide a continuous supply of the necessary quantity of fresh air and compel a continuous exclusion of the stale, poisonous carbonic acid gas laden atmosphere.

The quantity of fresh air required in a room will necessarily depend upon the number of persons occupying the room, the number of gas or oil lights burning, and whether or not there is a fire in the room, as all of these take oxygen from the air and return carbon dioxide to it. Gas and oil heating stoves are particularly unhealthy for the reason that all of the poisonous gas they manufacture is turned directly into the room, none of it being carried off through a chimney, as with a coal or wood heater.

The average human adult takes about fifteen breaths a minute, thus using, and rendering impure, 450 cubic inches, or fifteen and a half pints of air. Every twenty-four hours he will thus use 648,000 cubic inches, or 22,320 pints of air, which would weigh a little over twenty-eight pounds. In the course of a year he will breathe about 10,000 pounds of air, from which he will take some 657 pounds of oxygen, and to which he will return some 730 pounds of carbon dioxide.

Breathing air that contains one per cent. of carbon dioxide to the cubic foot for an hour or two will result in drowsiness and headache. Breathing such air for several hours a day over a period of weeks or months will slow down all the vital processes and open the way to total disability. The proper ventilation of all living and working rooms is, therefore, of much importance. Such ventilation has been secured when the room does not smell "close" or "stuffy" to those entering it from the out-of-doors. They are improperly ventilated when the occupants begin to yawn and to experience a feeling of physical lassitude and mental dulness.

The object of ventilation being to "air" the individual, it will not suffice to simply air the room while it is unoccupied by the individual and keep it tightly closed when he is present. There must be a continuous supply of fresh air at all times. Breathed air is as poisonous as any other "sewage," and air that has passed through the human or other animal body is as much animal excreta as any other substance that has passed through the same body. We should no more partake of lung excreta than we would of bowel or bladder excreta, whether it be our own or that of another.

Since the animal body requires oxygen twenty-four hours every day, and in cold weather as well as in warm, there is need for twenty-four hours of fresh air every day in the year. Cold air, however, is no more necessarily fresh air than cold water or cold food is necessarily fresh water or fresh food. The proper temperature of living and working rooms will depend upon the age, health and activity of those who occupy the room, the amount of clothing worn, and the quantity of moisture in the air. When the atmosphere contains the right degree of moisture, a person in good health will be perfectly warm and comfortable in a temperature as low as 60 degrees. For the average person, however, the temperature should be about 66. Rooms artificially heated to more than 70 degrees become a menace to health.

Moistening the indoor air benefits the pocketbook as well as the health. A room will be more comfortable at a temperature of 60 to 66 degrees and a relative humidity of 65 degrees than it is at a temperature of 70 to 74 degrees and a relative humidity of only 30 degrees. Normal outdoor air at a temperature of 70 degrees contains 70 per cent. of watery vapor. Under such conditions one is very comfortable. Let the moisture increase, however, the humidity rise only a few more degrees, and we "feel the heat" more than we would with a temperature of 90 degrees and the air normally dry.

Living rooms may be properly ventilated by opening the lower sash of a window facing the direction from which the wind is blowing and the top sash of a window that faces in another direction. The lower sash should be raised about one inch, the top sash lowered about two inches. Avoid

a direct draft by placing a board or screen in front of the "intake" window to deflect the current of air. The proper degree of humidity may be secured in various ways. Where hot air furnaces are used, it will be usually sufficient to keep water in the pans set in the furnace for that purpose. If steam heat is used, water receptacles may be attached to the radiators. If the rooms are heated with stoves, a pan of water may be kept on the back of the stove.

To determine the degree of moisture in the air, one may either purchase a hygrometer or use the home-made one described and recommended by Mr. E. R. Pritchard, Secretary of the Chicago Department of Health, as follows:

Cobalt Chloride	5 Drams
Sodium Chloride	150 Grains
Calcium Chloride	40 Grains
Gum Arabic	80 Grains
Water	2 Ounces

"Dissolve carefully and then soak thin white muslin in the solution and wring dry; when dry cut into strips for use and hang up in rooms where indications are desired. The muslin strips when dry are blue; when moist they are pink or red. If the air in your room contains 70 per cent. humidity, the muslin indicator, prepared as directed, would show pink. If there be only 50 per cent. or less, the color will be blue. So, too, if the strip assumes a grayish color inclining to pink, it would indicate, at a temperature ranging from 68 to 72 degrees, a normal and therefore healthful degree of humidity.—From "Health Hints," by E. R. Pritchard.

While we should breathe pure air at all times, it is more than ever necessary that we do so at night, as the repair of the body and the storing up of latent vitality goes on more rapidly during sleep than at any other time. Bedroom windows should be opened widely during the hours of sleep, with the shades as high as they will go. Where there are two windows in the sleeping room, the lower sash of one should be raised to the limit and the upper sash of the other lowered as far as it will go. If there is but one window, the top sash may be lowered and the bottom sash raised.

Sleeping rooms should, of course, be kept spotlessly clean, and should be used as sleeping rooms and not as

places of storage for clothing, books, etc., or for the exhibition of pictures, draperies and bric-a-brac. Bedrooms are often made "stuffy" by the odors emanating from their contents and the dust collected on their decorations.

Cold air is more life-giving than warm air because it contains a little more of the life-giving oxygen. To have life more abundantly, bedrooms should never be heated during the hours of sleep. One also sleeps best in an unlighted room.

The old-fashioned wooden bedstead with the high headboard should be avoided. It is most important to have a free circulation of air about the head of the sleeper. The high headboard prevents this, and causes the exhaled and poisonous carbonic acid gas to settle down upon him.

The position in bed, as at all other times, should be such as to permit the lungs the utmost freedom of action. Night clothing should be loose about the throat, chest and waist.

Sleeping nude in hot weather is not conducive to coolness; one is cooler when wearing some light material next the skin to absorb the perspiration. Bedrooms may be quickly cooled in hot weather by wetting a large cloth or sheet and suspending it in the room. If the room is well-ventilated, the temperature will drop from ten to twenty degrees within a hour.

Feather beds and hair mattresses are unhealthy.

Oxidation Versus Carbonization

Oxidize—or carbonize! That is the decree of nature. When carbon accumulates in the valves and cylinders of the gas or gasoline engine, there is immediate loss of power, "knocking" of the engine, and various kinds of "valve" troubles—a fact well known to every owner of an automobile. Accumulations of carbon in the animal mechanism produce the same results, a loss of vital energy, clogging of the "valves," and a "knocking" of the "engine." If the carbon is not removed, the valves will become entirely closed, the engine stops, and the fleshly mechanism is returned to its dust.

The gas engine, composed of inanimate metal, can make no effort of its own to remove the injurious deposits; it must

be sent to the shop to have the carbon scraped or burned out. But the animal body is a living flesh and blood mechanism, and the vital energy within the body will endeavor to remove the obstruction to its course by forcing it through the lining of the nose or throat, or bronchial tubes or lungs, in the form of slimes—and the individual suffers from a “cold” or “bronchitis” or “asthma” or “pneumonia,” etc. Or the obstruction may be forced through the lining of the chest walls or the lining of the little sacs that enclose the joints, and the individual will then suffer from “pleurisy” or “rheumatism.” These diseases are simply the result of nature’s emergency treatment for the removal of excess carbon. They are a part of the penalty we pay for taking into the body an excessive quantity of carbon-containing foods, or for failure to use the necessary quantity of oxygen to burn up what we have taken, or both.

The Body Clothed in Skins

The outside of the human body is covered and protected by a substance called “the skin;” the inside is covered and protected by a thin lining, or “inner skin,” called “membrane.” This membrane, like the outer skin, has its many thousands of pores, or openings from tiny glands that manufacture a sort of “internal perspiration” called “mucus” if it is a mucus membrane, serous fluid if it is a serous membrane. All organs that have direct or indirect openings to the outside of the body, such as the eye-lids, nose, mouth, throat, inside of the lungs, stomach, intestines, urinary organs, etc., are lined with mucus membrane; those that have neither direct nor indirect openings to the outside of the body, such as the brain, nerves, heart, bones, the little sacs that enclose the joints, the inside walls of the chest, the outside of the lungs, the inside of the abdominal cavity, etc., are covered with serous membrane.

This “internal perspiration,” mucus and serous fluid, are the lubricants of the internal mechanism, keeping the interior of all the fleshly tubes and hollow organs moist and pliable, permitting the organs themselves to rub against one another without chafing, and “oiling” the ends of bones at the joints so that they may move freely and without friction. Both lubricants are of about the same chemical

composition, consisting of the by-products of the decomposition of nitrogen containing substances and the by-products of the combustion of carbon-containing substances.

When this "internal perspiration" is normal, neither scant or excessive, the individual is as unconscious of its existence as he is of what is called the "insensible perspiration" of the outer skin. It is not until some portion of the "inner skin" begins to sweat, as during a "cold," when the excessive inner perspiration flows from the eyes and drips from the nose, or is coughed up, along with dead and worn-out particles of the "inner skin," from the air passages, throat or stomach, that he or she becomes aware of its existence. Or it may be a "serous membrane" that does the "sweating." If so, the excessive internal perspiration will accumulate in the enclosed space or sac, distending it and causing it to press against and irritate the adjacent organ or parts, as with the lungs in "pleurisy," or prevent the free and normal action of the parts that are enclosed by the sac, as with the joints in articular rheumatism.

Swelling and inflammation of the "inner skin" accompany this internal sweating, because the blood-vessels supplying the membrane are greatly distended by the increased quantity of blood that is rushing its load of sweat-making materials to the place of exit. When the over-load of carbon dioxide has been driven from the body, the swelling and inflammation disappear, the internal sweating ceases, and the sick person recovers.

The body uses a certain quantity of its carbon waste in the manufacture of its digestive juices and lubricating fluids, but all above that quantity must be removed by way of the lungs and outer skin or be forced out through the weakest part of the inner skin. The lining of the nose and throat, continually exposed to irritation from dust particles and sudden changes of temperature and humidity, is the weakest part of the average body, especially in the case of those who spend a great deal of their time in poorly ventilated rooms, and who in cold weather breathe air that contains too little moisture, and all of those persons who in cold weather swathe their throats in furs or mufflers. Membranes thus treated become so weak and sensitive that the slightest irritant will prove a sufficient "shock" to cause a congestion of blood in the part, with the consequent swelling, inflammation, and excessive discharge of mucus.

Table salt is a common irritant of the mucus membranes and a contributing cause of chronic catarrh. It is the only inorganic substance man habitually takes into his body, and it is the only substance that leaves the body without changing its form. All substances that supply the body with nourishment are entirely decomposed during their progress through the body, and leave it in a totally altered condition. But table salt always leaves the body in the form that it entered, as salt, in the tears, perspiration, mucus and urine.

Normal mucus is a thin, fluid lubricant that moistens the nostrils, throat, and all other organs lined with mucus membrane. Salt absorbs the moisture from this fluid and helps make these inner linings dry and harsh. The unnaturally dry air of overheated rooms absorbs still more of the moisture, and assists still further in impeding the circulation of the blood in the more exposed parts, such as the nose and throat. Where these pre-disposing causes are already at work, a slight shock or irritant will suffice to complete the congestion. A draft of cold air is the most frequent "exciting" cause; in some persons, a strong odor will prove a sufficient irritant.

An excess of moisture, indoors or out, is another "exciting" cause of diseases of the respiratory organs in persons whose blood is overloaded with carbon waste. The lungs, as well as the "pores" of both the outer and the inner skin, excrete water. Under normal physical and atmospheric conditions, this moisture is absorbed by the air as rapidly as it is produced; in a too humid atmosphere, the air is already so laden with moisture that it cannot take up that which is offered by the body. It therefore condenses on the surface of the body, inner and outer surfaces, blocking the millions of "pores" of both the inner and the outer skin, holding up the circulation and bringing about a congestion of the blood with all its attendant evils. This is one of the reasons it is so easy for certain persons to "catch cold" on a damp day, and it is on this account that those who live in damp climates, and those who work in damp surroundings, are more susceptible to colds, throat and lung troubles and rheumatism than those who live in a dry climate and those who are employed in dry places.

The Outer Skin

The "outer" skin serves not only as a protective covering and seat of the sense of touch, but as an excretory organ and a physical thermostat. As an excretory organ its nearly three million little sewers ordinarily drain from the body almost two pints of sewage every twenty-four hours. In the healthy body, this consists chiefly of water, some table salt and small quantities of carbon and nitrogen wastes. When the kidneys are overburdened or diseased, the nitrogen waste is greatly increased.

This "sewage," or perspiration, is continually coming from the body, unless the mouths of the sewers are forcibly closed or become plugged. A shock to the nerves, a violent emotion, is often sufficient to paralyze and close these little openings and back the "sewage" up in the body and cause congestion in some part. Sudden fright sends a "cold chill down your back;" exposure to a draft may do the same; it is so easy to "catch cold" after taking certain drugs that affect the nervous system, etc.

In cool or dry weather, and when we are not engaged in violent physical exercise, the water content of the perspiration is absorbed by the surrounding air as rapidly as it appears and we are not conscious of perspiring. Drops of "sweat" appear only when the temperature of the body is increased by that of the surrounding atmosphere or by violent exercise, when the water content of the perspiration is increased, or when the surrounding atmosphere is so humid that it will not take up any more moisture.

Cold Feet

Cold feet are a common "exciting" cause of colds. The largest pores are in the soles of the feet. When the feet are chilled these pores are temporarily closed and the "sewage" that has been coming through them is backed up in the blood, producing a congestion that will be relieved through the weakest membrane of the body.

Cold feet may be quickly warmed, and the circulation restored, by dipping them in cold water. After taking them from the water, rub vigorously with a towel, then with the bare hand until quite red, after which they should be warmly

covered. If the feet are given this treatment before going out on a cold day, and then dressed in thin cotton stockings, they will always be comfortably warm, and colds will become less common. Shoes should always be large enough to be comfortable and permit free circulation of the blood. Garters should not be tight enough to interfere with the circulation.

Circulation may be restored to the "outer skin" by washing the entire body in cool or cold water. This should be done quickly, and in a warm room, out of a draft. Use the hand as a wash-cloth and dry quickly with a towel, then go over the body again with the dry hand until warm. The upper portion of the body should be bathed first, then covered while the lower portion is attended to.

Keeping Warm in Winter

It is not the four walls of the room in which the stove stands that make the room warm, but the fire that is in the stove; neither is it the clothing with which we cover our bodies that makes us warm, but the fire that is burning within our bodies—that chemical combustion of carbon that keeps our blood at an average temperature of 98 degrees. Clothing, like the walls of the room, only serves to prevent a too rapid loss of heat. The clothes themselves produce no heat unless you set fire to them.

Many persons suffer from the cold, and make themselves susceptible to "colds" by dressing too warmly. The healthy skin is a natural thermostat, automatically regulating the surface temperature of the body according to the temperature of the surrounding atmosphere. In hot weather, or when the temperature of the body is increased by exercise or by artificial heat, the body is cooled by the evaporation of moisture cast upon its surface through the pores; when the weather is cold, the pores contract, less moisture passes through them, and an extra quantity of warm blood is sent to the skin.

Nature supplies our every need, but immediately withdraws whatever is not needed. It follows, therefore, that if we form the habit of standing or sitting before the stove or radiator in cold weather, the body surface, being thus artificially warmed from without, will not require an extra

supply of blood to keep it warm from within; and not being called for, it will not be sent; and the nerves and blood-vessels used in this work will become so weak from lack of use that they will no longer act when we leave the stove and expose ourselves to outside temperatures. It is the same when we attempt to keep warm by wearing surplus clothing. We simply make the skin inactive and smother the inward fire.

The healthy skin will take care of itself, so far as temperature changes are concerned. To have a healthy skin we should wear light-weight underclothing the year round. Those whose duties take them out in the cold can easily wear sufficient outer clothing to keep them perfectly warm—or, if they feel that they cannot possibly get along without heavy underwear they may wear it while outdoors, changing to light-weight when they come inside. Unless they do this they might much better wear thin underclothing, or even none at all, because they will be no more warmly dressed underneath when outdoors than when inside.

We do not cover our faces with several layers of clothing in cold weather; then why do so with the rest of the body. But do not make the mistake of discarding your flannels in the middle of winter. You cannot have a healthy skin this season, for you have worn those heavy clothes long enough to have effectually paralyzed your skin until the warm days come again; if you were to make a sudden change now, you would probably "catch" one of the "worst colds" you ever experienced. Wait until you make your semi-annual change of underwear, then lay the heavy-weights away and forget to change back into them again next fall.

Clothing should be worn sufficiently loose to permit of a free circulation of warmed air about the body. It is this "cushion" of air, heated by the internal fires of the body, that keeps us warm and comfortable. Tight clothing deprives us of this "cushion" of warm air and brings our bodies in direct communication with the external atmosphere, the body heat is communicated directly to the layers of cloth surrounding us and immediately transmitted to the outer air. Tight clothing also prevents the circulation of blood in the skin by pressing upon the blood-vessels. The skin thus made inactive soon loses its ability to act as an

excretory organ, and the waste materials that should pass through it are driven back into the blood to be cast out by the lungs and kidneys, which, as a rule, already have as much work as they can attend to. When the work that should be done by the skin is thrown back upon them they become fatigued and break down.

We do a certain amount of breathing through the pores. Tight, heavy clothing, by keeping the fresh air from the skin, deprives the blood of the oxygen it should receive through the pores. Instead of the life-giving oxygen, they are forced to absorb the poisonous gases that have been expelled through them, as well as other poisonous gases coming from the bowels, that are caught and condensed in the almost air-tight clothing. This matter, with the worn-out cells of the surface skin, and the oil exuded by the sebaceous glands, that open at the side of every hair on the body, re-enters the skin to clog the pores and poison the blood. The clean skin is not the one that is bathed only on the outside with soap and water, but the one that is bathed within by pure blood; and it cannot be thus bathed internally unless the blood circulates freely in every part. To have a good complexion and a healthy skin, it must be washed on both sides.

The Hair

The outer skin, except on the palms of the hands and the soles of the feet, is covered by a fine, thread-like substance called "hair." Over most of the body it is so short, fine and colorless as to be almost imperceptible. Only on a few parts does it usually grow to any length. Human hair reaches its greatest length on the head. The total number of hairs on an average healthy head is estimated at 100,000. The diameter of an average hair is one four-hundredth of an inch; a single healthy hair will sustain a weight of two and a half ounces.

Hair grows only from the root upwards, new cells forming at the root and the older ones being pressed upward to become part of the "shaft," or free end of the hair. The hair root is contained in a little pear-shaped bulb or sac called the "hair follicle," which is well supplied with nerves and muscles. From two to four small glands open into

each of these sacs and supply an oily substance called the "sebaceous fluid" that acts as nourishment for the hair and as a lubricant for the skin. The alkali in soap destroys this oily substance and deprives the hair of nourishment. Therefore, the head should never be washed in soapy water. Each hair lasts only for a certain length of time, after which it falls out and is replaced by another. This will continue as long as the hair root is not weakened or destroyed. The root once destroyed, the hair will never grow again.

The color of hair is due to minute pigment granules in the cells of the hair shaft. When this coloring matter fails, the hair turns gray. The deficiency always arises at the bulb or follicle in which the hair root grows. Anything that affects the nutrition of this root will affect the color as well as the growth of the hair.

The health of the hair depends primarily upon the mental and physical health of the body; secondarily upon local care and attention. Cleanliness of the scalp is the first essential. This is best accomplished by a thorough and vigorous brushing of the hair, which should be done at least once every day. A brush with soft bristles, about an inch and a half in length, should be used for about twenty minutes each time. While brushing with one hand the scalp should be gently massaged with the fingers of the other hand. A gentle pulling of the hair will help to bring about a free circulation of blood to the hair roots.

The hair also requires fresh air and sunlight. The head should be kept uncovered as much as possible and the hair well ventilated. The blood-vessels that supply the hair root with nourishment are very small, and a very little pressure will constrict them and shut off the supply of nutriment. Tight hat bands and the continual wearing of hats thus cause baldness.

The oily fluid manufactured by the sebaceous glands is nature's "hair oil" and "tonic," and is the only kind that will not prove injurious to the hair. It is always provided fresh, as needed, and should be removed as soon as it has served its purposes. If permitted to remain on the head it will combine with the worn-out cells of the scalp and the waste matter cast out of the pores, clogging the pores and the mouths of the tiny glands that supply the hair with its food.

The daily brushing will remove this waste material and keep the hair healthy.

Sweaty hair will sour, ferment, and rot away as quickly as any other organic substance. The head should be kept clean and cool, and all manufactured lotions, tonics, oils and shampoos should be avoided. The hair should be wet only with clean water, and should be kept uncovered as much as possible.

CHAPTER FOUR

WATER

"If he be thirsty, give him water to drink"—Proverbs 25:21.

Water is a compound of two of the gaseous elements of the earth, hydrogen and oxygen, in the proportions of two volumes of the former gas to one of the latter. It covers two-thirds of the earth's surface and forms about three-fourths of the substance of the human body. It is a powerful solvent, and because of this it is never found pure in nature. Even rain water, which is the purest, always contains traces of carbonic acid, ammonia and sea salt. The waters of springs, lakes and rivers are always more or less charged with earthy salts, most commonly carbonate of lime, sulphate of lime, muriate of potash, sulphate of potash, and soda. When the proportion of these salts is small the water is called "soft;" when they are so large as to prevent the water from dissolving soap the water is called "hard."

Waters that contain a considerable quantity of foreign ingredients are known as "mineral waters," and are by many mistakenly supposed to be beneficial in the treatment of diseased conditions. The worse such waters smell and taste, the more beneficial they are supposed to be. In this the beasts of the field manifest greater intelligence than man, since they refuse to drink them. Waters that are charged only with mineral matter will act upon the human body in the same manner as a strong dose of salts, and for the same reason and with the same injurious after effects, but those with strong odors are waters that are highly charged with ammonia, sulphuretted hydrogen (sewer gas) and other gases evolved during the decomposition of animal and vegetable tissue, fecal matter, etc. The Boston Mineral Spring, so popular in the year 1808, was found to receive its "medicinal" properties from a leaky cesspool that adjoined it.

River water is often polluted by the drainage from cemeteries along the bank of the river, and well water is often poisoned by drainage from a stable yard or near-by cesspool. Artesian well water is most favorable to health; the river water that flows from a mountainous district over

rocky ground is next best; then lake, spring and well water.

Water that is charged with poisonous gases is positively injurious to health, and that which is charged with insoluble earthy salts will slowly load the body with a mass of mineral matter that hardens the arteries, stiffens the joints and destroys the flexibility of every organ. For the best of health we should drink well aerated distilled water.

The human body is about 80 per cent. water, which is present in every tissue, varying from 99% in the saliva, 80% in the blood, 75% in muscle, 2% in the enamel of the teeth.

Water aids in the absorption of needed material and the elimination of waste products; it holds in solution both organic and inorganic compounds.

Those who are in health should drink only when naturally thirsty, and in quantity only sufficient to satisfy thirst. Those whose bodies are loaded with poisonous waste material will require larger quantities of water to dissolve and wash out this disease producing substance.

Users of tobacco and alcohol and those who use much table salt acquire an artificial thirst. Such persons should not drink within one hour before or after meals.

A glass of cold or warm water, taken three quarters of an hour before breakfast, will cleanse the throat and stomach, which are much more in need of a morning bath than those external parts of the body we habitually wash. A glass of water on an empty stomach is both cleansing and invigorating. It clears out all particles of sour, fermenting food substances, drives out the gases, and gives one a splendid appetite. Manufacturers of certain "patent" preparations advise us to put a little of their preparation in this morning glass of water, but that is not necessary. It is the water that does the work; and the purer the water is, the better it will do the work.

Cold water is best for those who are in health. Hot water is a stimulant. Its too frequent use will weaken the stomach. It will, however, nearly always give instant relief to a foul stomach.

Drinking shortly before going to bed is apt to cause insomnia by compelling the kidneys to work overtime.

Those who experience a "hungry" sensation within four

or five hours after a hearty meal should drink a glass of water instead of eating anything more. It requires from three to five hours for an ordinary meal to leave a healthy stomach, from seven to nine hours for it to leave an unhealthy one. When a feeling of hunger is experienced before the meal last eaten has had time to digest it is usually caused by the presence of gases generated in the stomach from fermenting food substances. Taking additional food at this time will only add to the trouble, while a glass of hot water will relieve it.

For ordinary drinking purposes water is most healthful when taken at the temperature of the surrounding atmosphere. The continued use of hot or warm water is weakening, and water that is too cold injures both the teeth and the stomach. An experiment made by Doctor Beaumont showed that a gill of water, at a temperature of 55 degrees, when introduced into the empty stomach of St. Martin, immediately lowered the temperature of that organ from 99 degrees to 70. After a few minutes the temperature of the stomach began to rise; but not until thirty minutes later, after the water had been for some time absorbed, did the temperature of the stomach regain its former level. The fall of temperature is much greater than in this experiment when ice-cold beverages enter the stomach suddenly. The immediate effects of such a rapid abstraction of heat are the contraction of the minute blood-vessels in the region of the stomach, which increases the blood pressure and disturbs the action of the heart, diminishes the sensibility of the nerves and muscular fibres of the stomach, and stops all secretions of digestive fluid. Those who drink freely of ice water when fatigued and perspiring freely run the risk of instant death. The overheated body should be allowed to cool before any liquids are taken; and whenever iced drinks are indulged in they should be sipped very slowly and warmed in the mouth before being swallowed. The healthful way of drinking is to take liquids slowly at all times. The practice of flooding the system with liquids dilutes the blood and overworks the kidneys and bladder, inducing diseases of those organs, dropsy, etc.

Water imbibed through the pores will appease thirst as well as when taken into the stomach in the usual manner. It is the only way in which thirst can be satisfied with sea water. The water will be absorbed by the pores while the saline particles adhere to the skin, from which they are easily washed.

We secure considerable water from even the driest of our foods. The following table shows the number of pounds of water contained in 100 pounds of various food substances:

Buckwheat	14 pounds	Chicken	73 pounds
Corn Meal	14 "	Codfish	79 "
Oatmeal	13 "	Cabbage	92 "
Barley	14 "	Cucumber	97 "
Rice	13 "	Turnip	87 "
Peas	14 "	Carrot	86 "
Beans	14 "	Potatoes	75 "
Eggs	67 "	Apples	84 "
Lean Beef	74 "	Peaches	80 "
Veal	75 "	Apricot	75 "
Mutton	71 "	Cherries	75 "
Pork	76 "		

This water is absolutely pure, and when the ordinary drinking water is in any way polluted it is safest to depend, so far as possible, upon that found in natural foods, or to quench the thirst with fruit juices.

Bathing

It is vitally necessary that we keep the inside of the body as clean as possible, washed with pure and freely flowing blood, but unless we also keep the outside clean we shall be no better off than the housekeeper who would sweep her home carefully and then leave all the sweepings on the front steps. In a very little while the most of that dust and dirt would be back in the rooms from which she had so painstakingly and laboriously swept it. And so it will be with us and our housecleaning if we fail to remove from the outside of the body the physical dust and dirt that is swept to its outer surface through the pores. The outside of the body gets soiled by dust and grime from external sources; and this dirt, with that swept from the body, will be absorbed by the pores unless it is removed. To be healthy

we must be clean outside as well as inside, and there is no better cleansing agent than the one the Creator has provided—pure water.

It is as cleanly and as healthful to wash the entire body every morning as it is to wash only the face and the hands. An ordinary wash basin is entirely sufficient for this, and the hands make the best of all wash cloths. The robust and healthy may use cold water for this daily bath, but the thin and the delicate should use tepid water for the parts that are customarily covered with clothing.

Turkish or Russian baths, or any other kind of sweat bath where the sweating is caused by artificial heat, are unnatural, and, therefore, injurious. Artificial sweating frees the body of only a very small quantity of impurities, and in doing so robs the blood, tissues, and the kidneys of needed water, overworks and weakens the sweat glands and the pores, and disturbs the action of every internal organ. A sweat bath produced in the natural way by brisk exercise in the open air, is always beneficial, if care is taken not to cool the body too suddenly or expose it to a draft while the pores are open. The exercise should be followed by a rub-down with a coarse towel, after which a tepid bath will remove the waste matter thrown out of the pores.

Moderate exercise before bathing is beneficial, but one should never bathe when much fatigued.

A bath should not be taken within one hour before eating, nor within three hours after eating.

The temperature of the room in which the bath is taken should not be below 70 degrees; if the bather is an invalid or aged person the temperature should be from 80 to 85 degrees.

Those who have attained to health, and who breathe and eat and drink in harmony with nature's laws, may safely bathe in running water in the open air at all seasons; all others will find it safer to use water of about the same temperature as the room in which the bath is taken.

Very hot or very cold baths are unnatural stimulants, and are as wasteful of vitality as any other form of unnatural stimulation.

The head and face should always be bathed first, to prevent a rush of blood to the head.

No more soap should be used than is absolutely neces-

sary to remove dirt. Many soaps make the skin dry and harsh, as the alkali they contain neutralizes and removes the oil from the skin.

Never drink any cold liquids just before bathing.

All full baths should be taken briskly and followed by a vigorous rub with a coarse towel. It is best for most people to dress immediately after bathing and then engage in some light exercise for a period of at least ten minutes.

A warm bath is best taken at night. A warm bath taken just before retiring will usually induce sleep.

A dry friction bath, taken every day, will keep the unexposed parts of the body as clean and healthy as soap and water. A coarse towel or a good flesh brush is all that is necessary. The friction bath is specially valuable for invalids and persons whose vitality is low.

Thin persons will derive benefit from an olive oil rub, taken once a week. After a bath in warm or tepid water, pour a very little olive oil on the hands and rub over the body until the oil is absorbed. Continue until the entire body has been gone over. Then go over the body with a soft cloth or towel to remove any surplus oil remaining on the skin.

Swimming and sea bathing are excellent exercises for those who are in ordinary health. They should never be indulged in by those who are very weak or by invalids. The swimmer or bather should leave the water the moment there is the slightest feeling of chilliness.

Water as a Remedy

Cold compresses, frequently renewed, subdue local inflammation and relieve pain. Hot compresses, applied to the abdomen, will relieve pain in the stomach and bowels; applied to the face, they will relieve neuralgia and toothache; to the head, they will relieve headache.

Cold water is an excellent remedy for piles. It relieves but will not cure. A cure can come only by curing the constipation that causes the condition known as piles.

Insomnia, nervousness, stomach trouble and constipation may be almost immediately relieved, not cured, by the internal bath. This is a treatment for which "specialists" have been in the habit of charging their patients \$10, and

is almost miraculous in its speedy results. Others are reaping a golden harvest from the sale of books describing this treatment, and from the sale of special apparatus that gives a modified and incomplete form of the treatment. The incomplete form of this treatment, simple colon flushing, is the usual "first aid" treatment of the osteopathic physician.

Colon-flushing machines, or "irrigators," as they are sometimes called, are sold at \$10 each, and the purchaser is always advised to use a particular "medicinal" tablet or powder in the water, said tablet or powder being supplied at the rate of \$1.00 per box or bottle. But these "machines," tablets and powders are not at all necessary. A much more effective and healthful cleansing of the lower bowel is secured by the use of an ordinary fountain syringe, and the water needs nothing added to it but a pinch of ordinary table salt or a little common baking soda.

Dissolve the salt or baking soda in two quarts of water so warm that you can just bear the tip of your elbow in it. Pour the water into the bag of the fountain syringe and hang the bag four or five feet from the floor. Open the spring clip near the end of the tubing and allow a little of the water to run through. Just a spoonful or two, to warm the tube and nozzle and to see that everything is working properly. Now rub a little vaseline or soap on the nozzle, and you are ready to proceed.

After removing the lower garments kneel upon the floor, with the head almost touching the floor before you. Having assumed this position, insert the nozzle of the syringe into the rectum, release the spring clip and permit the water to flow into the colon. It is advisable to keep the fingers on the clip, so that the water may be shut off for a second or two if it seems to be coming too fast or if there is any difficulty in retaining it at the first attempt. Any such difficulty is easily overcome by persistence, as the colon will accommodate a much larger quantity of water than this without any difficulty.

When the two quarts of water have been taken into the colon, turn over and lie on your back, with the buttocks raised by one or more pillows placed beneath them. This causes the water to flow into the transverse, or cross section of the large intestine; a part of the colon that the water from the ten-dollar "irrigators," "fountains," and other

colon-flushing machines never reaches. Remain in this position for two or three minutes, gently massaging the upper part of the abdomen with the tips of the fingers. This will break up and loosen the poisonous waste materials that are clinging to the intestinal walls.

Having completed this part of the treatment turn over and lie on the right side. This sends the water into the "ascending" section of the colon; the side on which the vermiform appendix is located. If this side of the colon is kept clean it will be impossible for you to have appendicitis. While lying in this position massage the right side of the abdomen as before for two or three minutes.

Now turn and lie on the left side. This sends the water back into the "descending" section of the intestine. Remain in this position for another two or three minutes, gently massaging this side of the abdomen; then rise to your feet and stand until the water and its load of poisonous waste materials is ready to leave the body, which will be within a very few minutes.

The colon bath is as beneficial to the infant and child as it is to the adult. When giving it to infants use a baby syringe and a half cup of warm water. For children up to seven years of age use the fountain syringe and one pint of warm water; from seven to fourteen years of age give one quart.

There are two important things to remember in either giving or taking this treatment. Always have the water warm enough. If it is too cool there is danger of causing a catarrhal condition of the bladder. From 100 to 105 degrees is the proper temperature. The tip of the elbow can just about bear this degree of heat, but if you have a thermometer it is best to use it. Secondly, never take or give the treatment within two hours after a meal. If taken too soon after a meal the pressure of the water and the forced back gases will cause nausea and intense pain. If these two things are kept in mind an occasional colon bath will be neither painful nor dangerous. They are recommended only as an emergency measure, however, and not as an habitual practice. The chief, and only necessary, objection to the weekly or semi-weekly colon bath, and many are using it this often as a hygienic measure, is that it is unnatural—as unnatural as it is to feed the body by way

of the rectum. It reverses the natural process. Had the Creator intended that the lower bowel was to be washed in this manner He would have provided it with a sprinkler or fire-plug attachment. For those who persist in living unnaturally, this unnatural method of removing body poisons is necessary and beneficial; for those who will live in harmony with nature's laws it will never be necessary.

CHAPTER FIVE

FOOD CHEMISTRY

"And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food."
—Gen. 2:9.

Wherever the surface of the earth is not naked rock or covered with water there is a layer of elementary substance, more or less mixed with the decaying remains of animal and vegetable matter, which is called the soil. This is the great storehouse for the "dust of the ground" of which the first man was formed, and from which the bodies of all men have been formed, nourished and repaired, and to which the worn and used particles of every animal body are returned. All flesh is continually rising from the dust and as continually returning to the dust again.

The chemical elements of the animal body as they exist in the soil are inorganic material and belong to the lowest of earth's three great natural orders, the mineral kingdom. Before they can enter the highest, the animal kingdom, and be formed into flesh and blood and bone, they must pass into and become a part of the intermediate or vegetable kingdom. No earthly element can be absorbed into the tissues of the animal body until it has been organized in the plant. The vegetable kingdom is the link connecting man and the lower animals with the dust of the ground, and all animal growth and nutrition comes directly or indirectly from plant life. Man must either eat the plant itself or eat the flesh of some other animal that has fed upon the plant.

The inorganic elements changed into animal food in the vegetable kingdom are really very finely powdered stones, lime-stone, iron-stone, magnesium and potassium-stone, etc. Under the influence of light, heat and life they are converted into food substances for both man and beast. Vital energy, latent in the germinal centre of the seed, is the magical force of nature which transmutes the base material of the earth into those substances that are more precious than gold to earth's fleshy inhabitants. Planted in soil sufficiently rich in the mineral substances required for the growth of the

plant to be and supplied with sufficient air, water and sunlight, the transforming process soon begins. The ethereal undulations proceeding from the sun penetrate the loosened earth about the tiny seed and by their successive shocks affect the atoms of matter composing its heart or germinal centre, bringing about those readjustments of atoms and their combinations with oxygen that result in the generation of vital energy. The seed also absorbs moisture from the earth and swells, and oxygen from the air that penetrates the soil unites with the carbon (starch), of which the greater portion of the seed is composed, and changes it to grape sugar, upon which the embryo plant feeds until it has developed sufficiently to burst through its enveloping skin. When it has sufficiently grown, the "plume" forces its way upward through the soil to the outer air, while the "radicles" or young roots dig their way still deeper into the earth in search of those inorganic mineral elements which are the food of the plant.

The leaves of the plant are the lungs through which it breathes in nitrogen, and the carbonic acid gas that is exhaled by man and beast. This gas is composed of atoms of carbon united with atoms of oxygen, a union which takes place in the lungs of all animals and by which the used carbon is removed from the fleshly body. When it is taken up by the leaves of the plant the sun's rays decompose the carbonic acid gas, separating the atoms of carbon from the atoms of oxygen. The hydrogen and oxygen that compose the water taken up by the roots and absorbed also by the leaves are separated in like manner. The carbon and hydrogen then combine and are taken up by the sap, which is the blood of the plant, to be formed into vegetable starches and sugars, while the oxygen thus liberated is returned to the atmosphere to be used again by man and beast. Thus does God make man's food from stones, and the order He has instituted, first the mineral, next the vegetable, and finally the animal, can never be changed. Man, indeed, cannot live upon "stones," but he can and does live upon the material that is made from "stones."

Food is required to supply material for growth, to replace tissues that are worn out by effort, for the generation of heat and energy, and to supply certain organic "salts" required in the processes of nutrition. Foods, there-

fore, are divided into three general classes, those rich in body-building material, those rich in the heat and energy producing elements, and those richest in organic mineral salts. The first class are the proteids or nitrogenous food substances, those rich in the element nitrogen, lean meats, fish, eggs, milk, cheese, nuts, beans, peas and lentils. The second class is composed of those foods that consist chiefly of combinations of carbon and hydrogen, for which reason they are called the "carbo-hydrates." These are the starches, sugars and fats, found chiefly in grains, and in vegetables other than peas, beans and lentils, and also in fruits. Fruits and vegetables are also rich in the organic mineral salts. Since the terms "proteid" and "carbo-hydrate" have proven so confusing to many, we shall in the chapters that follow speak of the first and second classes of foods as "body-building" and "heat and energy generating" foods.

Body-building foods will be burned for heat and energy when not enough of the heat and energy generating foods are eaten, but they are inferior for this purpose and yield an "ash" that is a frequent cause of disease. Body-building foods are also much more expensive than the natural fuel foods. The heat and energy generating foods cannot be used for body-building.

The healthful ration for either man or beast is the properly "balanced" ration, that combination of food substances that most perfectly supplies the quantity of each element needed by the body to which the food is supplied. The quantity of each kind of food needed will naturally be determined by the age of the animal, by the kind and amount of labor it is performing, and by the season of the year. The immature man or beast and the man or beast engaged in hard labor will require much larger quantities of both the body-building and the heat and energy generating foods than those who are full grown and those who do little hard work. More heat producing foods will be needed in cold weather than in warm, and in hot countries it will be necessary to select foods that provide the necessary energy generating material with a minimum of heat producing elements.

Inorganic mineral salts are often recommended in diseased conditions caused by a lack of the organic mineral salts in the food. Such remedies, however, are worthless, since no inorganic substance can be taken up and utilized by

the body. Efforts have also been made to extract the organic salts from various foods and market them in the form of powders, pills, tablets and solutions. These products are called "nutritive salt extracts," "tissue salts," etc. They are of as little value, however, as the inorganic preparations.

CHAPTER SIX

FRUIT

"Take of the best fruit in the land in your vessels"—Genesis 43:11.

Fruits are divided into two general classes, those which contain considerable body-building or heat and energy making material and those valuable chiefly because of their juices and organic mineral salts. Fruits containing less than 80 per cent. of water may be counted in the first class. The most familiar of these are the:

- | | |
|----------------|--------------|
| 1. Olive | 6. Grape |
| 2. Banana | 7. Plum |
| 3. Fig | 8. Currant |
| 4. Date | 9. Persimmon |
| 5. Pomegranate | |

The less familiar are the loquat, medlar, sapodilla and cactus fruit.

The Olive

"The trees went forth on a time to anoint a king over them; and they said unto the Olive tree, 'Reign thou over us.'"—Judges 9:8.

The name of this large berry is truly significant, Olive (O-Live), and it is well worthy the title "king of the fruits." It contains more than four times as much body-building material as any other fruit, more than twice as much as human milk and nearly twice as much as cow's milk. It contains more than sixteen times as much energy-making material, in the form of fat, as any other fruit, and is much richer in the organic salts of potassium, iron, phosphorus, sulphur and silicon than either human or cow's milk.

The olive contains no starch or sugar. But these are not needed, for the body will turn starch and sugar into heat when sufficient fats are taken to supply the needed energy. Starches and sugars also ferment readily; the starches changing first into grape sugar and then into alcohol, the sugars into alcohol and carbonic acid gas. Since the olive was free of these quickly corruptible substances it was

most fitting that its oil should have been used to mix with the flour and meal that were offered Jehovah by the Israelites.

The olive was doubtless one of the original Edenic fruits. It was known in antediluvian days, at least, since Noah immediately recognized the olive leaf brought to the ark by the returning dove. The olive tree has a gnarled and knotty trunk and a smooth, ash colored bark. It thrives best in warm, dry and sunny places, and reaches a height of twenty to forty feet. It grows very slowly but lives to an extreme age. The wood is hard, beautifully veined, has an agreeable odor, and is capable of a very fine polish. The doors and the cherubim of Solomon's Temple were made of this wood.

The flowers of the olive are small and white, and appear in the month of June. The fruit is like a plum in shape and size. It ripens from August to September, changing from green to purple and even to black. The green, salt-pickled olive is most extensively used, but the ripe fruit is the most healthful. The Chinese use the flowers of a species of olive to perfume and adulterate their tea.

The goddess of wisdom, industrial arts and defensive warfare, called Athene by the Greeks and Minerva by the Romans, was said by them to have been the one who created the olive and explained its manifold uses to man. Wreathes made of olive leaves were used by both the Greeks and Romans to crown the brows of their victorious generals. The leaf of the olive is still recognized as an emblem of peace.

The oil of the olive is lodged in the fleshy part of the fruit, and not, as is usual with other fruits, in the seed. Olive oil is the lightest of the fixed or non-volatile oils and might well be called "The Oil of Life." It may be used as an illuminant, as a nutrient, as a cosmetic, and as a medicine. Mixed with myrrh, cinnamon, calamus and cassia, it made the holy anointing oil with which Israel's priests and kings were anointed, and represented, so Bible students tell us, the holy spirit or influence of Jehovah. Olive oil was burned in the almond-shaped lamps of the golden candlestick in the holy place of the Tabernacle and the Temple and was the illuminating fluid in general use among the Hebrews.

Olive oil and meal formed part of the diet of the Israelites, and dried wheat, boiled with butter or olive oil, is still a common dish in Syria. This combination supplies about six and one-half times as much heat and energy-making material as it does body-building material, the wheat providing the starch that is lacking in the olive and the olive providing the fat that is deficient in the wheat. Olive oil is much used in our day as a dressing for salads, and as a substitute for lard. Fried foods are not healthful, but when they are used a vegetable oil is preferable to an animal fat.

Plain olive oil was used by the Hebrews for anointing the body after the bath. It gave the skin and hair a smooth and comely appearance. Its use is to be recommended today, especially for those who spend much of their time in dry and overheated apartments, the heat of which robs the body of much of its natural oil.

The use of olive oil as a medicine by the Hebrews is suggested in Isaiah 1:6, where we read: "From the sole of the foot even unto the head there is no soundness in it; but wounds, and bruises, and putrifying sores; they have not been closed, neither bound up, neither mollified with ointment (Margin, "oil")." In the New Testament we read that the disciples of Jesus cast out many devils "and anointed with oil many that were sick, and healed them"—Mark 6:13. The apostle James, writing to his fellow-Christians, instructed them as follows: "Is any sick among you? Let him call for the elders of the church; and let them pray over him, anointing him with oil in the name of the Lord"—James 5:14. In our day olive oil is used in medicine as a laxative and for burns and acute inflammations of the skin. Its drug store name is "sweet oil," and the druggist will usually ask if it is for internal or external use. If told that it is to be used internally he will put olive oil in the bottle, but if it is to be used externally he generally substitutes cotton-seed oil, which is much less expensive. The cheaper brands of olive oil are usually adulterated with cotton-seed oil, which is difficult to digest. The pure oil is naturally the most expensive, but no other kind should be taken into the body. The best variety of pure olive oil is said to come from the vicinity of Aix, in France. Olive oil and grape juice should always be taken in preference to cod-liver oil in all cases where cod-liver oil is generally recommended and used. Cod-

liver oil is the product of decomposed animal matter, a disease inducing animal fat, while olive oil and grape juice are nature's healing and nutritive vegetable remedies.

The Banana

The banana and plantain, a closely allied variety of banana, are natives of the East Indies. They are tropical and subtropical fruits, and form the entire sustenance of many of the inhabitants of tropical countries.

The banana is the better known to most of us. It is one of the most universally used of the nourishing fruits, but many persons suffer from its use by reason of having eaten it before fully ripe or because they have improperly combined it with other foods. It is never sufficiently ripe until the skin is well covered with black spots, and it should never be eaten in combination with sugar or milk or with other foods of a starchy nature, and it should never be mixed in the stomach with either fruit or vegetable acids. It is said, however, to combine well with cream.

Bananas are about equal to bread in nutritive value, and supply the body with most of the food elements furnished by the cereals. Bananas are richer in starch and sugar than any commonly used fruits except the persimmon. In body building materials bananas take fourth place among the fruits, the olive ranking first, black raspberries second, fresh figs, currants and pomegranates third. In fats the banana takes seventh place among the fruits, the olive coming first, whortleberry second, grape and pomegranate third, blackberry and black raspberry fourth, cherry fifth, and the huckleberry and persimmon sixth.

Many cases of chronic stomach trouble are said to have been cured by an exclusive use of very ripe bananas. The fluid extract from the root of the banana is sometimes used in medicine; it is said to be a valuable alterative, and useful in scrofulous affections. The fibres of the leaf stalk of both the banana and the plantain are made into Manilla hemp.

The Fig

The fig tree is a native of Asia Minor, and often reaches a height of twenty feet. In favorable situations two crops

are produced in a single season, one in the early summer from the buds of the previous year, the other, and chief crop, in the autumn from the buds of the spring growth. The fruit is a hollow receptacle containing a great multitude of minute flowers, the ripe carpels of which are embedded in the pulp. The flowers are male and female, the male situated at the orifice at the top, the female in that part of the concavity next the stalk. The fruit always appears before the leaves.

The fig ranks number three among the fruits in body-building material, and number seven in the starch and sugar heat and energy producing elements, but contains little fat. It is rich in organic mineral salts, particularly sodium, calcium, magnesium, sulphur, silicon and chlorine.

That the fig is one of the fruits that grew in the Garden of God is proven by the fact that fig leaves were used by Adam and Eve in making the first article of clothing ever worn by human kind. Figs were a staple article of diet among the Hebrews, and are still much used by all Oriental peoples, the young figs being specially prized because of their sweetness and flavor. Figs ground in a food chopper make an excellent paste or butter. With whole-wheat bread or crackers this makes a healthful lunch for school children and office workers. Dried figs contain sixty per cent. of grape sugar (predigested starch).

Figs were used as a medicine by the Israelites. When King Hezekiah's life was threatened by a boil the prophet Isaiah said: "Let them take a lump of figs and lay it for a plaster upon the boil, and he shall recover."—Isaiah 38:21. In modern medicine the fig is combined with senna, coriander, cassia fistula, tamarind, sugar and water, as a cathartic for children.

The Date

"The righteous shall flourish as the palm tree"—Psalm 92:12.

It is said that "Bethany," the name of the village in which Mary, Martha and Lazarus lived, means "the house of dates;" which indicates that the date palm was once plentiful in Palestine though now comparatively rare except in the Philistine plain.

The palm tree grows from within upward, and often reaches a great height. The stem or trunk of the date palm shoots up to fifty or sixty feet without a branch or division, and is of nearly the same thickness throughout its length. From the summit spreads a magnificent crown of perpetually green feather-shaped leaves, which were used by the Jews as the symbol of victory and peace instead of the olive leaf that was used by the pagans. Other remarkable characteristics of the palm are the great elasticity of its fibre, its determined upward growth even when loaded with weights, and the fact that it bears its best fruit in its old age.

The flowers of the date palm are fleshy, colorless, and six-parted. The female plant bears a bunch of 180 to 200 dates, weighing from twenty to twenty-five pounds. This fruit is the daily food of millions. It is almost as rich as the olive in body-building material, and very rich in the starch and sugar heat-and-energy-making elements. This latter fact makes it possible to manufacture a fermented liquor or wine from the date, something that cannot be done with the juice of the olive. The Arabs pound and knead dates into cakes, which are their staple food during their journeys across the deserts.

Sago is the nutritive starch from the pith of the sago-palm.

Palm oil is extracted from the fruit of the guinea palm. It is used in the manufacture of soap and candles, and for lubricating purposes. In cool places it acquires the consistency of butter, and is of an orange yellow color. It is used by the natives of the Gold Coast for butter, and is said to be a wholesome article of diet when eaten fresh.

The Pomegranate

The pomegranate is said to be a native of the north of Africa. The Romans called it the Carthaginian apple. It grows upon a dense, spiny shrub that reaches a height of eight to twenty feet. The flowers are large and of a brilliant red; the fruit is as large as an orange, having a hard rind filled with a soft pulp and numerous red seeds. The pulp is more or less acid and slightly astringent.

The pomegranate equals the grape in vegetable fat, but contains a little more heat and energy making material in the form of starch and sugar and is richer in body-building material. The pomegranate was doubtless one of the original Edenic fruits, and is closely associated with the grape, fig and olive in the Bible. A good land was said to be "A land of wheat and barley, and vines and fig trees, and pomegranates; a land of oil olive and honey."—Deut. 8:8. Carved figures of the pomegranate adorned the tops of the pillars in Solomon's Temple, and worked representations of the fruit, in blue, purple and scarlet, ornamented the hem of the robe of the Ephod (Ex. 28:33, 34). In Canticles 8:2 we have an intimation that wine was sometimes made from the juice of the pomegranate.

In modern medicine a liquid alkaloid extracted from the root of the pomegranate is used as a remedy for the removal of tape-worm. It is said that it rarely fails to bring away the whole worm. Since it is this same alkaloid that causes the slight astringency of the pulp of the fruit, it is reasonable to believe that the fruit and juice, in considerable quantity, would prove equally efficient.

The Grape

The grape was probably another of the fruits eaten by our first parents. It is first spoken of in the Bible in Genesis 9:20, 21, where we read that Noah planted a vineyard and became drunken on the wine that he made from the grapes.

The grape was cultivated by both the Egyptians and the Hebrews, and is frequently referred to in the Bible. Jesus used the vine to illustrate the spiritual union that was to exist between Himself and His disciples. The grapes of Palestine were especially large. The vintage began in September and was a season of general rejoicing. The best of the Palestine grapes are now dried as raisins, the remainder being boiled down to a syrup, called "dibs," which is used as a condiment. The dried currants of commerce are a small seedless grape that is cultivated in Greece.

The grapevine grows in all sorts of soil, and is so long-lived that no one has yet been able to determine the limit of its natural existence. Vines 100 years old are looked

upon as very young. Vines in Burgundy are known to be more than 400 years old, and it is said that vines 600 years old have been known.

The grape holds fourth place among the fruits in body-building material, third place in vegetable fats, and fifth place in the starch and sugar heat and energy-making materials. It is also rich in bi-tartrate of potassium, "cream of tartar," which in small quantities renders the blood alkaline and in large quantities acts as a purgative.

The people of Switzerland use grape leaves as a dressing for cuts and wounds. They also make a tea from the leaves, which they claim strengthens the nerves.

Medicinal Fruits

The "flavor fruits," or those which contain more than 80 per cent. of water and are valuable chiefly because of their acids, may well be called medicinal fruits, since their juices are valuable blood purifiers and tonics. All the fruits act as depurating agents and grapes, though rich in nutriment, also possess medicinal virtues. The most familiar of the medicinal fruits are the apple, cherry, grapefruit, lemon, orange, peach, pear, pineapple, and the various kinds of berries.

Ripe apples, when eaten raw and by themselves, are very easily digested. They are valuable in feverish conditions, relieve headache, are soothing to the nerves, and mildly purgative. The malic acid of the apple kills disease germs, and is said to be a cure for alcoholism. Apple juice will neutralize the acids formed in the stomach from a surplus of fatty foods, will stimulate a sluggish liver and overcome biliousness. A glass of apple juice every morning about three-quarters of an hour before breakfast will relieve constipation. Apples are rich in potassium, sodium, magnesium, phosphorus, sulphur and silicon.

Cherry juice is an excellent spring tonic.

The juice of grape-fruit, taken without sugar, is an antidote for biliousness.

Lemon juice, without sugar, is germicidal. It will clean the digestive tract of mucus and will stop the fermentation of food in the stomach. It is also an antidote for biliousness.

Oranges are rich in calcium, magnesium and sulphur. Orange juice is germicidal, and a liver stimulant. A glass of the juice taken three-quarters of an hour before break-

fast every morning will prevent and cure constipation. Orange juice also possesses nearly the same nutritive value as milk.

Unfermented grape juice is both a food and a medicine. It gives the maximum of nourishment with a minimum tax upon digestion, and is at the same time a tonic and blood-purifier. Combined with equal quantities of olive oil, it will accomplish all that is claimed for the nauseous cod-liver oil so often prescribed by the drug doctor.

Peach juice is a purgative.

Pears are a mild laxative.

Pineapple juice is one of the best remedies for sore throat and diphtheria, and acts with equal force in malarial affections. Taken in too large quantities, however, it will produce sore throat. Pineapple juice contains a very active vegetable pepsin that is a quick digester of meats and all nitrogenous or body-building foods.

Blackberries, because of their many seeds, are purgative; blackberry juice, however, is constipating.

Cranberry and currant juices are poisonous and assist in bringing on rheumatic conditions.

Strawberries are an excellent blood purifier when eaten alone; combined with sugar and milk or cream they are apt to induce skin disorders, liver trouble and rheumatic affections.

Fruit juices should never be taken with ordinary meals or mixed in the stomach with starchy foods. Acid fruit juices should always be taken without sugar, milk or cream. Thin persons and those with poor blood should avoid the acid fruits and juices, especially in very cold weather. Such persons will find orange, grape and apple juices of the greatest benefit. Stout, full-blooded people should favor the acid fruits and juices.

When taken as medicine, fruit juices should be used just as they come from nature's laboratory. When they are adulterated with cane sugar they are rendered inert as medicines, and very often changed into poisonous compounds; and when we cook them we so change their chemical composition as to deprive them of most of their value as medicines. Wines and brandy are simply "spoiled fruit juices;" juices that have so far decomposed that a greater part of their sugar and starch content has been converted

into alcohol. The coloring matter of the fruit, the water, and a few of the medicinal elements remain, but they are mixed with a powerful poison. It is entirely unnecessary to preserve fruit juices in alcohol; they may be preserved in nearly their natural form by sterilizing in bottles.

When the tongue is heavily coated and fever is present all ordinary foods should be discontinued. After the bowels have been thoroughly cleansed by the colon bath described in a preceding chapter, the patient should go to bed and be kept on a diet of orange, apple and pineapple juice and all the distilled water that can be taken until the fever subsides and the tongue returns to its normal condition. If it is necessary to continue this treatment longer than twenty-four hours the first meal after recovery should be a small quantity of beef broth or other very easily digested food, given as often as desired unless followed by fever.

In cases where it is not necessary to go to bed, the following program will usually produce the desired results: A small glass of fruit juice and a large glass of the purest water obtainable every two hours, with light exercise in the open air between doses. The cleansing and blood-purifying process will be much hastened if no other food is taken during the course of the treatment.

The following tables show the relative mineral salt value of each fruit whose mineral salt content or "ash" has been analyzed. The figure preceding the name of the fruit shows its rank or standing among the fruits in the particular salt named, the figures following the name of the fruit show the percentage of the salt in the ash of the fruit.

POTASSIUM

1. Olive	80.90	6. Peach	54.70
2. Prune	63.08	7. Grape	50.09
3. Blueberry	57.10	8. Orange	48.09
4. Cherry	57.07	9. Lemon	48.03
5. Fresh fig	55.08		

SODIUM

1. Strawberries	28.50	6. Peach	8.50
2. Dried Fig	26.27	7. Olive	7.53
3. Apple	26.10	8. Cherry	6.08
4. Gooseberry	9.90	9. Blueberry	5.16
5. Prune	9.05	10. Grape	1.40

CALCIUM (The Base of Lime)

1. Lemon	29.09	6. Prune	11.50
2. Orange	22.07	7. Grape	10.80
3. Dried Fig	18.91	8. Peach	8.00
4. Strawberry	14.20	8. Blackberry	8.00
5. Gooseberry	12.20	9. Cherry	7.50

MAGNESIUM

1. Apple	8.75	6. Orange	5.04
2. Gooseberry	5.85	7. Lemon	4.04
3. Peach	5.20	8. Grape	3.00
4. Fresh Fig	5.06	9. Olive	0.18
5. Cherry, Prune	5.06		

IRON

1. Strawberry	5.90	6. Apple	1.40
2. Gooseberry	4.56	7. Blueberry	1.10
3. Prune	2.50	8. Peach	1.00
4. Cherry	2.00	9. Olive	0.92
5. Dried Fig	1.46	10. Grape	0.40

PHOSPHORUS

1. Grape	21.02	6. Prune	14.01
2. Gooseberry	19.70	7. Strawberry	13.80
3. Blueberry	17.40	8. Apple	13.70
4. Peach	15.20	9. Fresh Fig	12.04
5. Cherry	15.01	9. Orange	12.04
		10. Olive	1.33

SULPHUR

1. Apple	6.10	7. Blueberry	3.10
2. Gooseberry	5.90	8. Fresh Fig	3.09
3. Peach	5.70	9. Lemon	2.08
4. Cherry	5.08	10. Prune	2.07
5. Orange	5.02	11. Olive	1.05
6. Grape	4.03		

SILICON

1. Strawberry	12.05	6. Grape	2.75
2. Cherry	9.00	7. Gooseberry	2.60
3. Dried Fig	5.93	8. Peach	1.50
4. Apple	4.30	9. Blueberry	0.90
5. Prune	3.15	10. Olive	0.65

CHLORINE

1. Dried Fig	2.70	5. Gooseberry	0.75
2. Strawberry	1.70	6. Prune	0.40
3. Grape	1.52	7. Olive	0.18
4. Cherry	1.35		

Selection and Preparation of Fruit

Fruit as it hangs from the parent stem is full of life of the tree or vine upon which it grows; and when it has been sufficiently cooked or ripened by the sun it is all ready for human consumption. Fully ripened fruits, eaten as soon as possible after they have been plucked, are, therefore, the most healthful and lifegiving. Few of us, however, can secure fruit while it is still pulsating with vitality. The best we can do at present is to secure fruit that has been fully ripened on the parent stem and to use it before it begins to decay.

Fruits that are canned without sugar are the best substitutes for fresh fruits. Evaporated fruits are the next best substitute. These are most healthful when eaten uncooked. They should be well washed, then covered with water and left to soak for several hours. The unpeeled variety of evaporated apricots and peaches should always be selected. The peeled variety is always prepared while in an unripe condition and are, therefore, not so healthy.

Preserved fruits, jams and jellies are a mild substitute for brandy and cannot be classed as healthful foods. The long cooking deprives the fruit of most of its medicinal properties and changes the composition of its nutritive elements. The chief food value in any of these substances is that of the great amount of cane sugar that has been added to them; an amount so greatly in excess of normal human needs that much of it is converted into alcohol and carbonic-acid gas soon after it reaches the stomach. Acid fruit juices and cane sugar are chemically inharmonious and when taken together in the stomach, as they must be when preserves, jams or jellies are eaten, will cause trouble. Taken on top of an already sufficient meal, as they usually are, they prove very injurious. Those who habitually indulge in them suffer from skin affections and are more susceptible to coughs, colds and catarrhal troubles than others.

Fruit should never be eaten with an ordinary meal. Eat it between meals or make a meal entirely upon fruit. Mixing fruits with other foods, particularly potatoes, bread or cake, is the cause of much stomach trouble.

CHAPTER SEVEN

NUTS

"Spices and myrrh, nuts and almonds."—Gen. 43:11.

Vegetarians and food reformers have adopted nuts as a substitute for meat in preference to the legumes because they contain even more of the body-building elements and in addition are very rich in fat, of which the legumes as a rule contain very little. Few of the nuts commonly used, however, contain any appreciable quantity of the starch and sugar heat and energy making elements and much less water than most other food materials.

Diet reformers would have us believe that nuts were one of the original foods upon which man lived during his sinlessness and perfection in the Garden of Eden, and Genesis 1:29 is often quoted as a Scriptural proof of their theory. But this Scripture rather disproves it, since Adam was told to eat the fruit, not the seed, of the trees. He was never bidden to eat the seed kernel contained in the fruit, which is the part the diet reformer recommends. Nuts are spoken of as a food in only one place in the Bible, Genesis 43:11, where the pistachio nut, which is really a leguminous seed and not a true nut, is mentioned among the good things of the land that were to be taken to Joseph in Egypt.

The word "nut" is not a definite botanical term, but is used indiscriminately in speaking of the seed kernels of the fruit of many varieties of trees and plants, the actual fruit of which is seldom or never eaten. In most cases these fruits are simply masses of sour and bitter woody pulp surrounded by a tough thick skin that hardens as it ripens. Probably they would be best described as fruits the most of which have "altogether gone to seed."

There is every reason for believing that these are fruits from which the "curse" has not as yet been lifted by cultivation; fruits that are still in the abandoned, undeveloped condition in which father Adam found all the fruits of the earth outside of Eden's garden. Within that garden which God had specially prepared as a suitable home for the greatest of His earthly creations every fruit and flower and vegetable had been brought to the limit and perfection of

its development; outside that garden all things had been left in their primal crude and uncultivated condition, "cursed" (abandoned by God) for man's sake, that he might earn his bread in the sweat of his face by cultivating and developing them. In the fairy stories that we all read in childhood the wicked person was sometimes punished by having his food and all that he touched turn into stone. Adam's case was somewhat similar. The fruits that in his garden home had been so soft and luscious were in this outer world, into which he had been driven because of his wilful sin, bitter and of a stone-like consistency. But from that condition Adam and his children have throughout the ages developed all the fruits that are now eaten, and some day they will have brought the remaining ones to a degree of perfection that will make them a fit food for man.

One of our most delightful modern fruits, the peach, is a remarkable example of what can be accomplished by man in the way of cultivating and developing the crude fruits of the earth. Only a few centuries ago the peach tree was a poisonous Persian shrub. The pulp of its fruit was hard, disagreeable and bitter, and resembled the pulp of a green walnut. It was in the same crude, undeveloped condition as the walnut and all other "nut" fruits of the present day. Special care and cultivation lifted the "curse" from the peach, and from the nectarine, which belongs to the same family, and will do as much for the almond, which is also a member of the peach family, and for all those other fruits of which as yet only the seed are edible.

Man was led to the use of "nuts" as food in the same way that he was led to use the roots of plants as food—by famine and the lack of any more suitable material. The flesh or pulp of the fruits to which he had access were so bitter that he could not eat them, but the seed kernel or "nut" was more palatable, and contained sufficient concentrated nourishment to sustain him during the time he was engaged in improving his environment. Wherever he has sufficiently improved his surroundings to provide himself with an abundance of more pleasant and more easily digested food he has dropped "nuts" from his daily bill of fare and used them only as a confection or addition to his diet. Nuts held this place in the diet of all prosperous civilized races until the time of the food reformer. Since then they have

been loudly praised and extensively advertised as a part of man's original and natural diet and as an article of food that would, therefore, make all who eat of it as full of life and health as man was in the beginning. Our food reformers mean well enough, and many of them have labored diligently in their efforts to ascertain the nature of man's original and life-giving foods. Their investigations have carried them back a very long way, but not quite far enough, for they have stopped outside of the Garden of Eden and at a time when man was farther away from his natural food than at any other time in his existence. To study "aboriginal" man is to study man in his most degenerate condition after the fall and at a time when he had been placed upon a "diet of death" as a punishment for sin. Man at this time was very close to nature, it is true, but it was nature in the rough, nature in the "cursed" or abandoned condition, from which man was to redeem it by six thousand years of hard labor. "Getting back to nature" as it was in those days, by attempting to live as Adam and his children were compelled to live after the expulsion from Eden, would mean going back to the beginning of man's punishment. If we must "go back," let us go all the way back—to the Paradisical condition. But far better even than that is to attempt to keep up with nature.

The Almond

The almond tree is a native of North Africa. It belongs to the same family as the peach and nectarine and resembles the peach tree in form, blossom and fruit. The fruit has a downy outer covering, like the peach, but its flesh is tough and fibrous; it envelopes the wrinkled stone within which is the seed kernel or "almond" that is eaten. There are two varieties of almond, the sweet and the bitter. Almond oil is expressed from both, and is used by perfumers and in medicine. The bitter almond produces Prussic acid.

Almonds contain two-thirds less water than dried beans, but more body-building material and fat than round steak or wheat flour. They are as rich as dried beans in iron; richer than beans in phosphorus and richer than corn in magnesium; but contain less sodium than peas, less calcium than rutabagas, and less sulphur than rice. They contain neither silicon nor chlorine.

The almond is first mentioned in the Bible in Genesis 43:11, which is the only place it is spoken of as a food. The bowls of the golden candlestick that stood in the holy place of the tabernacle were made in the shape of almonds; and when Aaron's rod budded it "yielded young almonds." The Hebrew word that is translated "almonds" in the Authorized Version literally means "hasten." (See Jer. 1:11,12.)

Beechnut and Chestnut

The beechnut and the chestnut belong to the same family. They are natives of Asia Minor and are a staple article of diet among the natives. The beechnut is dried and powdered and made into bread; roasted, it is used as a substitute for coffee. It yields a sweet oil that is used by the natives of Silesia for butter. The beechnut is richer in body-building material and fat than the chestnut, but contains less than half as much starch. The chestnut is richer in starch than any of the other nuts.

Brazilnut

The brazilnut grows on the banks of the Amazon, Rio Negro and Orinoco. The tree averages 100 feet in height with a stem only two feet in diameter; the fruit contains from 15 to 20 nuts. Brazilnuts contain more body-building material than boiled eggs and more fat than any other nut except the pecan, but are poor in starch and sugar.

The Butternut

The butter nut or white walnut of America belongs to the walnut family, of which the pecan and hickorynut are also members.

The Cocoanut

The cocoanut is the fruit of a species of palm tree that is a native of Africa, the East Indies and South America. It contains very little body-building material or starch, but is rich in fat. The kernels yield an oil, which is a solid vegetable fat. Cocoanut oil was formerly used only in candle-making and in the manufacture of soaps and pomatum but is now largely used in the manufacture of nut butterines and lard substitutes. When the kernels of the nut are dried

before the oil is expressed they are known as "copra." The cocoanut is the richest of the nuts in sodium, sulphur and chlorine.

The Hickory Nut

One variety of hickory produces the pecan and another the hickory nut. The hickory nut is a little richer than the pecan in body-building material but not quite as rich in fat.

The Pistachio

The pistachio, like the peanut, belongs to the legumes rather than to the nuts. It is a native of Western Asia, and its kernel much resembles that of the almond in taste. The "mastic gum" used by dentists as a temporary filling for teeth is made from the rosin that exudes from the pistachio plant. The pistachio is richer than beans in body-building material.

The Pecan

The pecan is a species of hickory nut. It contains less body-building material than round steak but is the richest of the nuts in fat and the poorest in starch.

The Walnut

The walnut is a native of the East. It is almost as rich in body-building material as round steak, and contains more fat than the cocoanut, but is low in starch. Walnuts are the richest of the nuts in iron and phosphorus. The green fruit is often made into a pickle. The boiled husks of the walnut and the bark from the roots yield a dark brown color that is used by dyers in dyeing woolens, and by cabinet-makers in staining wood.

The following tables show the relative value of the nuts whose "ash" or mineral salt content has been analyzed. As in the preceding tables, the figures to the left indicate the rank or standing of the nut while those on the right show the percentage of the salt contained in the ash.

POTASSIUM

1. Dried Chestnuts	56.70	4. Almonds	28.00
2. Cocoanut	43.90	5. Beechnut	17.15
3. Walnut	31.10		

SODIUM

1. Cocoanut	8.40	4. Walnut	2.25
2. Dried Chestnuts	7.12	5. Almond	.20
3. Beechnut	5.20		

CALCIUM

1. Beechnut	18.40	4. Cocoanut	4.60
2. Almond	8.80	5. Dried Chestnuts	3.87
3. Walnut	8.00		

MAGNESIUM

1. Almond	17.66	4. Cocoanut	9.40
2. Beechnut	14.15	5. Dried Chestnut	7.47
3. Walnut	13.00		

IRON

1. Walnut	1.32	3. Almond	0.50
2. Beechnut	1.00	4. Dried Chestnut	0.14

PHOSPHORUS

1. Walnut	43.70	4. Dried Chestnut	18.10
2. Almond	43.60	5. Cocoanut	17.00
3. Beechnut	30.50		

SULPHUR

1. Cocoanut	5.09	3. Beechnut	2.45
2. Dried Chestnut	3.80	4. Almond	0.37

SILICON

1. Beechnut	2.70	3. Cocoanut	0.50
2. Dried Chestnut	1.50		

CHLORINE

1. Cocoanut	13.50	3. Dried Chestnut	0.50
2. Beechnut	02.44		

Nuts were the very best of food for those members of the race who fell to the level of the wild beast in their general manner of living; those so-called "aboriginal" tribes who, long after the flood dwelt in caves and in the tops of trees. No other food they could have secured would have supplied them with the body-building and energy creating elements they needed to help lift them from their lowly condition. And nuts are still the very best kind of body-build-

ing and energy making food for those who live in trees and who are unable to procure the cultivated grains and legumes; but for all others nuts are an unwholesome food; especially so for those whose lives are so crowded and so filled with physical and mental effort that they can give neither the time nor strength needed for the proper digestion of such concentrated nutriment.

When nuts are eaten they should be used in very small quantities and thoroughly masticated; and they should never be eaten within three hours of a meal consisting of any articles rich in body-building material or fat. Those who use nuts as a substitute for meat will profit by soaking them in water, as they do the dried legumes and evaporated fruits. No more than two ounces of soaked nuts should be eaten at a meal, and they should be supplemented with bulky foods that contain little fat or body-building material. Salted nuts cause less digestive trouble than the unsalted because the salt draws water from the blood to soften them.

CHAPTER EIGHT

VEGETABLES

"He causeth the grass to grow for the cattle, and herb for the service of man."—Psalm 104:14.

The plant foods called vegetables are divisible into six general classes, as follows:

1. Fruit vegetables.
2. Flower vegetables.
3. Herbaceous or leaf vegetables.
4. Tubers or the roots and bulbs of plants.
5. Legumes or the podded seeds of plants.
6. The cereals.

The Fruit Vegetables

are the cucumber, egg-plant, okra, pepper, pumpkin, squash, tomato, watermelon, canteloup, and rhubarb. The cucumber, pumpkin, squash, watermelon and canteloup belong to the gourd family; the pumpkin coming originally from India, the cucumber from the Levant. The cucumber was known to the ancient Romans but was looked upon as a doubtful vegetable by the majority. It is valuable chiefly because of its organic mineral salts.

The tomato or "love apple" is a native of South America, and with the egg-plant and potato belongs to the nightshade family. Both the egg-plant and tomato are medicinal rather than nutritious. The excessive use of tomatoes is said to cause bleeding of the gums, sore mouth, loosening of the teeth, and to induce piles. It also has a tendency to induce rheumatism and gout, and should never be mixed in the stomach with starchy foods, bread, potatoes, etc. Eaten in small quantities, alone or with leaf vegetables or meat, it is not injurious.

The Herbaceous or Leaf Vegetables

The herbaceous vegetables are the true herbs of the field, only a few of which have as yet been redeemed from the "curse" by cultivation and made fit food for human

consumption, although many of them have long been used in medicine. The leaves, shoots and stems are the parts used as food, and are valuable because of their pure water, which averages about 90 per cent. of their substance, their mineral salts, and the large amount of chlorophyll they contain. Chlorophyll is the green coloring matter of plants and has the property of decomposing carbonic acid gas, and assists in the assimilation of carbon and nitrogen. The custom of "blanching" green vegetables makes them less valuable as foods because it bleaches out the valuable chlorophyll.

The leaf vegetables in general use are asparagus, broccoli, brussels sprouts, cabbage, cauliflower, celery, dandelion, kale, lettuce, parsley, rhubarb, spinach and water-cress.

Asparagus was known to the ancient Greeks and Romans, who raised stems from 12 to 20 feet in height. The Greeks claimed that asparagus injured the sight, but believed that a slice or two of pumpkin would counteract all injurious effects thus produced. Asparagus is particularly rich in silicon, sodium, iron and phosphorus.

Broccoli, brussels-sprouts, cauliflower, kohl-rabi and cabbage all belong to the same family and have been developed from wild kale and colwort, which still grow wild on the coasts of Britain and other European shores. Cabbage was known to the ancient Egyptians, and worshipped by them as a god. The Greeks and Romans used it as a remedy for the after-effects of intoxication, and Cato claimed that it was a panacea for all the ills of mankind. Erasistratus, an ancient Greek physician who lived in the third century B. C., prescribed it as a specific for paralysis, and Hippocrates prescribed it, boiled with salt, as a remedy for colic. These were the first "cabbage doctors" known to history. Tiberius Cæsar, it is said, was extremely fond of broccoli.

The members of the cabbage family are particularly rich in sulphur, calcium, phosphorus and chlorine. Overcooked and improperly cooked and loaded with "dressings" as they usually are, these vegetables are apt to be indigestible. They are most healthful when eaten uncooked in salads, and the most healthful dressing for them is olive oil. They should never be mixed in the stomach with fruits.

Celery and celeriac have been developed from a poison-

ous plant called "apium." Both contain an active principle called "apiol," which has the power of soothing the nerves. In medicine, celery seeds are used to cover the taste of other drugs.

The dandelion is a native of Europe but is now common in America. The English appellation is a corruption of the French "dente de lion" (lion's tooth) given the plant because of the shape of its leaves. The dandelion makes an excellent salad. Its juice possesses tonic properties, increases the flow of urine and acts as a mild purgative. The root is used in medicine as a remedy for dyspepsia.

Lettuce was cultivated by the ancients and was recommended by the old Greek physicians as a cure for hypochondria and a provocative of sleep. In modern medicine the juice is frequently used as an ingredient of patent cough medicines. It has sedative properties somewhat similar to opium but without any depressant after-effect, and also has the power to increase the flow of urine. The leaves of the young plant only are eaten, as they become narcotic and poisonous when the plant is in flower. Lettuce is rich in potassium, iron, magnesium and silicon.

Parsley is a native of Sardinia. It is used principally in soups or as a garnish for meats, etc. The Greeks believed it to be a cure for poisons. A volatile liquid derived from the root is used in modern medicine as a remedy in intermittent fever.

Water-cress belongs to the nasturtium family and is a native of western Asia, Europe and North Africa. It is used generally as a salad vegetable and possesses properties that make it an excellent remedy for scurvy.

THE TUBERS

The Creator has at no time given either man or the lower animals permission to use the roots of any tree or herb of the field as food. Man and the lower animals were to live upon that which grew upon the "face" of the earth and had been prepared and made fit for their consumption by the life-giving light and heat of the sun and the purifying action of the atmosphere, not upon that which grew beneath the earth in darkness and in immediate contact with the processes of corruption and decomposition continually going

on in the soil. Roots, therefore, are not a natural food for man, in spite of the fact that they now form so large a part of his daily diet. The only Scriptural reference to roots as an article of diet is in Job 30:4, where juniper roots are spoken of as the "meat" of those who fled into the desolate wilderness and were perishing of famine. It was doubtless some similar experience that first led man to use roots as food.

Some of the tubers are true roots, like the beet and the sweet potato; others, such as the white potato, are simply underground stems; and still others, such as the onion, etc., are bulbs. The tubers are, however, generally divided into two classes—the succulent tubers, or those largely composed of vegetable sugar and water, and those which are largely composed of insoluble vegetable starch. The succulent tubers most generally used are the beet, carrot, garlic, ginger, horse-radish, leek, onion, parsnip, radish, salsify and turnip; the starchy tubers used in the temperate regions are the sweet and white potato and the Jerusalem artichoke; those commonly used in tropical countries are the cassava, yam, yautia and taro. The succulent tubers, like the succulent fruits and leaf vegetables, are valuable chiefly because of their indigestible fibre, which acts as a "broom" in the bowels, and their medicinal acids and mineral salts; the starchy tubers are storehouses of heat and energy making material that must be changed to grape-sugar by the saliva before it can be utilized by the body.

The beet is a native of the Mediterranean region, and was known to the ancient Greeks who used it as a remedy for worms. The red beet is the variety generally used as a table vegetable, and it is said to produce injury if eaten in large quantities. The leaves of the sea beet are used in England as a substitute for spinach, and French "chard" is the broad fleshy midrib of the leaf of the small white beet. Beet root is used in England principally for the production of sugar and the feeding of farm animals. Large quantities of beets are used for sugar-making in the United States also. Both beer and spirits are made from them. Beets contain very little body-building material and are rich in sodium and calcium, but comparatively poor in potassium, magnesium, iron and phosphorus.

The carrot and parsnip belong to the same family and are much alike except in color and flavor. Carrots were a favorite with the ancient Greeks and Romans. They consist chiefly of fiber, water, vegetable sugar and mineral salts, being especially rich in sodium, phosphorus, sulphur and chlorine. They lose about 30 per cent. of their food elements when boiled, so are of little value unless eaten uncooked or when used in soups.

The radish has been cultivated in Britain since the sixteenth century. It is no longer known in the wild state. The leaves of the radish are used in some places as a salad, and the green pods as a pickle. They contain organic compounds similar to the essential oil of mustard and are rich in potassium, sodium, calcium, phosphorus and sulphur.

White salsify or "oyster plant," as it is commonly called, is the variety of salsify grown in the United States. It can be used as a food for diabetics because it contains a form of starch unlike the other vegetable starches.

The turnip was another tuber that was greatly esteemed by the ancient Greeks. About 90 per cent. of the turnip is water, but it is rich in mineral salts, particularly so in potassium, sodium, calcium, phosphorus and sulphur.

The onion, leek and garlic belong to the same family and are more useful as medicines than foods. They contain more sulphur than any of the vegetables except horse-radish and red cabbage, and are beneficial in overcoming a tendency to constipation.

Ginger and horse-radish are used as condiments with which to flavor other foods. They stimulate digestion by irritating and distending the mouths of the glands that secrete the digestive fluids. Horse-radish acts upon the urinary organs in the same manner and increases the flow of urine.

Potatoes

The most generally used of all the tubers are potatoes. The sweet potato is a true root and has been known and used much longer than the white. Neither, however, were known much before the sixteenth century.

The sweet potato is said to be a native of the Malayan Archipelago. It is related to the morning glory, and in

warm countries it produces both flowers and seeds. The southern potatoes contain more sugar than those grown in the north; and both varieties contain a little more body-building material, fat and fiber than white potatoes, but a little less water. The custom of adding large quantities of butter to the drier sweet potato makes a mixture so rich as to sometimes interfere with digestion.

The White Potato

The white or "Irish potato" is not a true root but an underground stem that has been developed from a plant that grows wild in Chile and Montivideo. Like the tomato, egg-plant, thorn apple, hensbane and tobacco, it belongs to the deadly nightshade family; and for this reason was long looked upon with suspicion when first introduced into England. This suspicion was not altogether unfounded, since there have been cases of actual poisoning from white potatoes. All the members of the nightshade family contain variable quantities of a poisonous alkaloid called "solanine." Potatoes ordinarily contain too little of this substance to produce any unpleasant symptoms, but as they grow older and begin to sprout the quantity of solanine increases and makes them dangerous. Potato sprouts, very old potatoes, and potatoes that turn green on exposure to light should never be eaten. Unripe potatoes, and those which have grown on the surface of the ground, also contain abnormal quantities of solanine. The belief in the power of the potato to ward off an attack of rheumatism doubtless originated in the knowledge of its relationship to the deadly nightshade, from which "belladonna," a drug used in medicine as a remedy for inflammatory rheumatism and gout, is derived.

About 75 per cent. of the white potato is water. It contains very little fiber, very little body-building material, fat or sugar, but is rich in starch. Starch made from the potato is used in making sizing for paper and as an adulterant for cornstarch and fine flours; considerable alcohol is made from white potatoes in Europe.

The potato was unknown to the ancients and is not mentioned in the Bible, but one of its near relatives, the mandrake or "May apple," is spoken of in Genesis 30:14, 15, 16; and Canticles 7:13. The significance of the earlier

references is realized when it is known that the mandrake is said to have the power of exciting voluptuousness. It is for this reason the Arabs have named it "the devil's apple."

The mandrake is a native of Asia, and grows low, like lettuce, which it somewhat resembles. The flowers are purple, and the fruit, which contains many kidney-shaped seeds, is about the size of a small apple, and is either ruddy or yellow in color. The root is usually forked, and because of its occasional resemblance to the human figure it was once supposed to possess an inferior kind of animal life, and to shriek when torn up. It was the common belief that death or madness would come to any one who heard the shriek of a mandrake. This superstition is preserved by Shakespeare in two of his plays, as follows:

"Mandrakes, torn out of the earth,
That mortals, hearing them, run mad."
—Romeo and Juliet.

"Would curses kill, as doth the bitter mandrake's groans?"
—Henry VI.

An extract from the root of the mandrake is used in medicine as a remedy for remittant fever, bilious vomiting and malarial jaundice.

Jerusalem Artichoke

The Jerusalem artichoke is the root of a species of sunflower, which is of about the same nutritive value as the white potato, but contains a form of starch like that in salsify. In ancient Greece and Rome artichokes were used by drinkers to prevent headache, and by singers to strengthen the voice.

Cassava

This is the name of two varieties of South American shrub, also called "manioc" and "mandioc." The root of the bitter variety contains a poisonous prussic acid compound, which is removed by drying. Tapioca is made from the starch extracted from the dried root of this variety.

Both varieties of cassava are eaten by the natives of South America, who also make bread and cakes from the flour obtained from the roots.

Cassava is rich in starch, but contains little body-building material or fat.

Taro

Taro is a tropical variety of the ornamental plant we know as "elephant's ears." It is cultivated in the Pacific Islands, where the natives use the leaves as we do spinach and make a flour from the roots. The Hawaiian "poi" is a dish made of fermented taro.

The Yam

The yam somewhat resembles the sweet potato in appearance but is more like the white potato in flavor, composition and contained nutriment.

Yautia

The yautia is a native of the West Indies, and is closely related to the taro. Both the root and stalk are eaten, and a flour is made from the dried root.

THE LEGUMES

The legumes or podded seeds belong to the "pulse" family, and next to the cereals contain more body-building material than any of the vegetable foods. Those most generally used by man as food are beans, lentils, peas, and peanuts. The latter are usually thought of as belonging to the nut family, but are properly classified with the legumes.

The legumes, unlike the cereals, are still eaten while green and succulent, as well as when fully ripened and dried; like the cereals, they are also made into flour.

Beans

Beans were known to the ancient Egyptians and were a part of the diet of the ancient Israelites. They are first

mentioned in the Bible in II Samuel 17:28. A variety of bean now known as the "windsor" and eaten by the poorer classes in Europe was cultivated by the Greeks and Romans. The "soy" bean and its products are eaten in China and Japan; and the "locust" bean, called "St. John's bread" and sold as a confection in America, is a part of the regular diet of the poor in the Mediterranean region. The "scarlet runner" bean is used as a table vegetable in England, and a small flat bean called the "frijole" is the daily food of most of the natives of Mexico. The beans generally used in the United States are the numerous varieties of the kidney" bean and the "lima," both of which are said to be natives of South America.

Beans contain more body-building material than meat, and very much more of the starch and sugar heat and energy making materials, but less than one-third as much fat. They are rich in organic mineral salts, particularly potassium, calcium, magnesium and phosphorus. They are richer than any other of the legumes in phosphorus, but poorer than any other in iron.

Dried beans are an excellent and economic food for healthy persons engaged in active outdoor employment, but usually cause considerable distress when eaten in any quantity by those in poor health or of sedentary employment. This can be avoided by adding baking soda and salt to the water in which the beans are soaked and by removing the skins from the beans, which is easily accomplished by par-boiling.

Peas

Peas were unknown to the ancients, and are not mentioned in the Bible. They are said to have been brought into Europe from Holland in the Middle Ages. There are fewer varieties of peas than beans, and they are somewhat less palatable than beans, but are much more easily digested.

Peas contain the least body-building material of any of the legumes and the least starch and sugar, but have a little more fat than beans. They are the richest of the legumes in potassium, magnesium and chlorine, and a little richer than beans in iron.

Dried peas are more easily digested when both soaked and cooked in soft water, preferably rain water.

Lentils

The lentil is the oldest, and next to the peanut the most nutritious of the legumes. It is first mentioned in the Bible in Genesis 25:34. The brown or reddish Egyptian lentil, which is the best flavored, was doubtless the variety of which Esau's pottage was made. Lentils are still one of the chief articles of diet in Egypt and Syria. They are much used in Roman Catholic countries during lent, and it is said that this season received its name because of this usage.

Lentils contain more body-building material, fat, starch and sugar than peas or beans and are richer than either in sodium, calcium, iron and silicon, but poorer than beans in phosphorus, and poorer than either beans or peas in potassium and magnesium, and contain no sulphur or chlorine.

Peanuts

Peanuts are used more as a confection than as a food by all except vegetarians and the followers of diet reformers, who use them as a substitute for meat.

The peanut is the richest of the legumes in body-building material, but is the poorest of them all in starch and sugar. It is very rich in fat, however, which makes up more than thirty per cent. of its substance.

The roasted nut ground into a paste is called peanut butter and used by many as a substitute for ordinary butter and as a filling for sandwiches. Peanut oil is expressed from the African nut, and is used in the manufacture of nut butterines, as a salad oil, as an adulterant for olive oil and in the manufacture of vegetable soaps. The shells as well as the kernels of the peanut, so it is said, are used in the manufacture of coffee substitutes.

Flour

Pea, bean and lentil flour is used for the making of soups and soup tablets. It is said that the Aztecs made a bread of bean flour; and in some European countries bean flour is mixed with wheat or rye flour in bread-making, but it will not make a leavened or yeast raised loaf when used alone.

THE CEREALS

The word "cereal" is derived from Ceres, the name of a Roman goddess who was worshipped as the patroness of agriculture and protectress of the fruits of the ground. Ceres was called Demeter by the Greeks.

The cereals or grains are the seed of certain grasses that have been specially cultivated by man ever since the expulsion from Eden, and they include barley, buckwheat, maize (corn), millet, oats, rye, rice and wheat.

Barley

Barley was called "Seorah" (long hair) by the Hebrews; its English name is derived from two Welsh words, "bara" and "llys," which signify "bread-plant."

Barley is one of the oldest, one of the most important, and the most hardy of the cereals. It is better adapted for cold climates than any other grain, and the coarser varieties will thrive where no other cereal can be grown. Barley flour contains much less moisture than wheat and does not contain any true gluten, so cannot be used by itself in the making of leavened or yeast-raised bread. When used alone it is made into unleavened cakes. It was doubtless with bread of this kind that Jesus fed the multitude. Barley bread was used chiefly by the poor among the Hebrews. In Palestine the barley harvest comes in March and April, always preceding the wheat harvest by at least a week. In Egypt the barley harvest is usually a month earlier than the wheat. The Egyptians used barley for the brewing of beer.

Barley is richer in organic iron and sulphur than any of the cereals, and contains more silicon (the base of silicic acid, which is found in the hair, teeth and nails) than any of them except oats. Barley contains less starch and sugar than rice, wheat, corn or rye, and less fat than oats or corn, but compares favorably with wheat in body-building material. Barley contains more woody fibre or waste material than rye, corn, rice or wheat, which makes bread that is made from the whole barley flour more valuable to those who are troubled with constipation.

The grain deprived of its husk is called "pot" or "Scotch" barley; when deprived of its husk and pollicle, and polished and rounded, it is called "pearl" barley.

"Barley water" is a decoction consisting of two ounces of pearl barley boiled in one and a half ounces of water and afterward strained. It is used in medicine as possessing emollient, diluent and expectorant qualities.

Buckwheat

Buckwheat was brought into Europe from Asia, where it was used as a bread cereal, by the Crusaders, who called it "Saracen corn." The American name is a corruption of "buchweizen" (beech wheat), the name given it by the Germans because of the shape of its seeds. Buckwheat is called "brank" in England, and is used chiefly as a winter food for oxen, swine and poultry.

Buckwheat meal is used in Germany in the making of puddings and porridge; in some parts of Russia it is the principal cereal food of the poorer classes; and in America it is made into fried cakes which are a very popular winter breakfast food with all classes.

Buckwheat grows on the poorest soils, and contains more indigestible woody fibre than any cereal except oats. It contains less body-building material than rye, oats, barley or wheat, less fat than corn or oats, and less starch and sugar heat and energy producing elements than any cereal but oats. It contains less mineral matter than Kaffir corn, barley or oats, but more than rye, wheat, corn or rice.

Maize

Maize or Indian corn, known in Europe as Turkish wheat, was evidently known to the ancient Egyptians since kernels of a species of this grain have been found in the wrappings of mummies known to be more than three thousand years old. The name "maize" comes from the Haytian name for the plant, "mahiz."

Corn is the one cereal that is now commonly eaten before the grain has hardened. Green corn, boiled or roasted and eaten from the cob, is a typical American dish. It is also palatable when eaten uncooked.

Maize or corn contains less woody fibre, except Kaffir corn, and less mineral matter than any cereal except rice. In mineral matter it is richer than all the cereals in chlorine and poorest of all in iron. Maize contains less body-

building material than buckwheat, rye, oats, barley or wheat, and less than half as much fat as oats, but is richer in starch and sugar than any cereal but rice. Most of the fat and mineral salts are in the embryo or heart of the kernel, which is usually removed from the meal in the modern process of milling.

Maize flour or corn meal, like barley flour or meal, contains no true gluten, so cannot be used alone in making fermented or yeast-raised bread. It makes very good unleavened bread and cakes, however, and is much used in the rural districts for the making of porridge or mush. In Italy this mush is called "polenta," and is the principal food of the peasants in some sections during a greater part of the year.

Hulled, coarsely ground corn is called "hominy" and "samp." When the hulls have been removed by steeping in a weak solution of lye, the product is called "lye hominy."

The modern "corn-flake" breakfast foods are made by thoroughly cooking the husked grain and running it between rollers while it is still wet. Table salt is usually added during the cooking, to improve the flavor. In the so-called "predigested" brands barley malt is usually added, but not in sufficient quantity, according to government analysis, to warrant the claim that the starch in these foods has been largely predigested. The patent corn products rank lowest of all in the digestibility of their body-building material.

In medicine the juice extracted from corn-silk is sometimes used as a remedy for incontinence of urine and for rheumatism.

Kaffir corn is a variety of millet that is cultivated in Africa.

Millet

There are several varieties of millet, cultivated in different parts of the world under different names. Millet was known to the ancient Hebrews as "dochan" and was one of the six ingredients the prophet Ezekiel was instructed to use in making the bread upon which he was to live for three hundred and ninety days while prophesying the siege of Jerusalem (Ezek. 4:9).

Dhurra, the Indian millet, is, after wheat, the chief crop

of the Mediterranean region and is used by the laboring classes as food. As "dukhn" it is extensively cultivated in Egypt. The Kaffir corn of Africa is a variety of millet. It contains less fibre than any cereal except rice, and more mineral matter than any except barley and oats. It is the poorest of all cereals in body-building material, but richer in fat than any of them but oats. In the starch and sugar heat and energy-making materials it is poorer than any except buckwheat and oats.

Oats

The oat is found growing wild in the northern part of Europe, and is the only cereal except rice that has been traced to its original grass. The oat flourishes best in the colder climates and degenerates in warm ones. It contains more fibre and more mineral matter than any of the other cereals, being particularly rich in silicon, chlorine, sulphur and calcium. It is as rich in body-building material as winter wheat, and is richest in fat of all the cereals, but it is the poorest of all in starch and sugar.

Oats are cultivated principally as a food for horses, but are much used in the making of porridges, cakes, etc., for human consumption, especially in Scotland and the northern part of England. The Scotch "brose" is a mixture of oats and meat or kale boiled together, and in Wales a dish called "budrum" is made by boiling oats that have been permitted to ferment. The modern "rolled" oats of the American breakfast table are oats that have been thoroughly husked, steam-cooked, and pressed between rollers and dried.

Rye

Rye is a native of the Levant and was known to the Israelites, as is shown by the references made to it in Exodus 9:32 and Isaiah 28:25. It is understood to be the grain called "spelt" and "fitches" in other parts of the Bible.

Rye thrives in climates and soils unfavorable to wheat and grows more rapidly than wheat. When milled entire, as it usually is, it contains more indigestible woody fibre and more mineral matter than the "patent" wheat flours,

and is a little richer in body-building material. It contains less fat than any cereal except rice, but is equal to winter wheat in starch and sugar.

Rye, like wheat, is rich in gluten and makes a good yeast-raised bread when used alone, though not quite so well raised a loaf as wheat, since the rye gluten is not quite so elastic. Rye bread is the chief food of the laboring classes in Russia, Sweden, Norway, Denmark, Holland and Prussia. Unmalted rye meal mixed with barley malt and fermented forms the "wash" from which the spirits known as Holland Gin is distilled.

Rye is subject to a parasitic disease called "ergot," which renders the grain dangerous for food. Ergot is a powerful irritant of the stomach and intestines and greatly excites the motor nerves. It has the property of arresting hemorrhage. It is used most frequently in medical practice to prevent uterine contraction in childbirth.

Rice

This is the most largely consumed of all the cereals, and the only one of them, except oats, that has been traced to its original grass. Wild rice is found on the borders of lakes in the East Indies, and is called "water oats," "Indian rice" and "Canada rice."

Rice was known in the East long before it was introduced into Egypt and Greece. It is the staple food in all tropical and sub-tropical countries, but cannot be made into yeast-raised bread of itself because it contains no true gluten. Two crops of rice a year are obtained in China and India, and sometimes in Japan. Rice is not eaten in the East until at least three months after it is harvested; it is considered to be at its best when it is three years old. The Chinese make a liquor from rice that they call "sake" which is more intoxicating than wine. The "arack" of the East Indies is another liquor that is made from fermented rice.

Rice contains less woody fibre than any of the cereals, and is one of the most easily digested, but it is one of the poorest in body-building material and the poorest of them all in vegetable fat. It contains more starch and sugar, however, than any of them. Rice also contains a greater percentage of the organic mineral salts than any other cereal

except oats, being the richest of them all in sodium, calcium and phosphorus, and richer in iron than any of them but barley. It is poorest of all in chlorine, and next to the poorest in magnesium and sulphur. About seventy-five per cent. of this mineral content is lost when the grain is peeled and polished. The unpolished, natural brown rice is the most healthful.

The popular "puffed" rice breakfast foods can be made at home by popping the rice in the oven like pop-corn.

Wheat

Wheat is the most naturally balanced food substance that grows, containing as it does in its natural condition more nearly the proper proportion of every food element excepting fat that is required by man than any other vegetable substance. It has been cultivated from the earliest times, and will grow in almost any climate, but thrives best in the temperate regions. It is first mentioned in the Bible in Genesis 30:14.

Wheat contains more true gluten than any other cereal, so that wheat flour is the best of all flours for the making of leavened or yeast-raised bread. Flour made from the "hard" wheat contains gluten of a strong, tenacious character, and will produce a large raised loaf from a comparatively small quantity of flour. The "soft" wheats yield gluten of a less tenacious character, so produce a smaller loaf from the same quantity of flour. The "soft" wheats, however, make a loaf that contains less water and a bread that has a milder flavor.

Wheat contains more body-building material than any of the other cereals, more fat than any of them except buckwheat, maize, Kaffir corn and oats, and more starch and sugar than any except rice. It contains less woody fibre than any of them except barley, buckwheat and oats, and about the same amount of mineral matter as rye, which is less than buckwheat, Kaffir corn, barley or oats. Wheat is richer in potassium than any cereal except rye, and richer in sodium, calcium and phosphorus than any except rice; richer in magnesium than any except corn, and richer in iron than any except barley. Most of these salts are in the "germ" or vital spot of the grain and the bran, both

of which are removed in the making of white flour. The grain is robbed of these essential elements because an ignorant public demands a fine white flour, and because the removal of the "germ" or living heart of the grain enables the manufacturer to keep the flour indefinitely without danger of its spoiling. The difference between whole wheat flour and superfine, devitalized white flour in body-building elements, fat and mineral salt content is shown in the following table:

	Body-building Material	Fat	Mineral Matter
Whole-wheat Flour	13.60	1.90	2.00
Superfine Flour	10.20	0.90	0.50

There are said to be over four hundred varieties of wheat, each differing from the other in its content of body-building material, sugar and starch, mineral matter or gluten. The various brands of flour are made by blending different varieties of wheat so as to give the flour its desired characteristics.

The genuine "Graham" flour was invented by Dr. Sylvester Graham, and is a wheat meal that contains all of the grain. Much of the flour that is sold as Graham, though, is a flour from which much of the bran has been removed by regrinding and bolting.

Genuine "whole" wheat flour is practically the same as Graham flour, but much that is sold as whole wheat is treated the same as the so-called Graham.

In some of the lower grades of white flour the "germ" or vital heart of the wheat is retained and only the bran removed, but both the germ and the bran are removed from the finer grades.

There are many brands of breakfast food made from wheat. One of the most popular ones can be made at home. Simply dip stale bread in molasses and water, dry it in the warming oven for twenty-four hours, then crush and serve.

The puffed and other ready-to-eat grains are more wholesome than those which are made into mushes. Cereal mushes are seldom cooked sufficiently to burst the starch granules, and are usually eaten with sugar and swallowed without having been sufficiently masticated. In consequence the starch is not digested and must remain in the stomach and intestines to sour and ferment and cause trouble.

Farina is a cereal preparation consisting of starch and a little gluten. It is generally made from the starchy part of the wheat seed, but is also made from corn, rye and oats, and sometimes from beans and potatoes.

MEDICINAL VALUE OF VEGETABLES

Asparagus juice acts upon the kidneys.

Carrot, cucumber and spinach are blood purifiers.

Lettuce is richest in organic iron.

Onion juice is a remedy for biliousness, catarrhal and bronchial troubles. It dissolves uric acid. Used to excess, however, it induces catarrhal conditions and neuralgia.

Horse-radish is a powerful stimulant. Used to excess it will cause inflammation of the urinary tract.

The following tables show the relative value of those vegetables whose "ash" or mineral salt content has been analyzed. As in the tables for fruits, the figures to the left indicate the rank or standing of the vegetable in the particular salt, while those on the right show the per cent. of the salt in the ash.

POTASSIUM

1. Tomatoes	68.01	13. Rye	32.10
2. Potatoes	60.10	14. Radish	32.00
3. Lettuce	46.06	15. Wheat	31.20
4. Cauliflower	44.36	16. Horse-radish	30.76
5. Beet	44.00	17. Onion	30.02
6. Pea	43.10	18. Corn	29.80
7. Rutabega	43.06	19. Savoy cabbage	27.50
8. Turnip	43.00	20. Unpolished rice	25.00
9. Beans	41.50	21. Asparagus	24.00
10. Cucumber	41.20	22. Oats	17.90
11. Carrot	36.90	23. Spinach	16.60
12. Lentils	34.88	24. Barley	16.30

SODIUM

1. Spinach	35.20	13. Cauliflower	5.90
2. Carrot	21.20	14. Rice	4.20
3. Radish	21.15	15. Barley	4.10
4. Asparagus	17.10	16. Potatoes	4.06
5. Lentils	13.50	17. Horse-radish	4.00
6. Red cabbage	12.10	18. Onion	2.50

7. Savoy cabbage	10.20	19. Wheat	2.10
8. Rutabega	10.12	20. Oats	1.70
9. Beet	10.03	21. Rye	1.50
10. Cucumber	10.00	22. Corn	1.10
11. Turnip	8.03	23. Beans	1.10
12. Lettuce	7.50	24. Peas	1.00

CALCIUM

1. Red cabbage	27.90	13. Cauliflower	5.60
2. Savoy cabbage	21.40	14. Tomato	5.08
3. Radish	14.00	15. Lettuce	5.01
4. Spinach	11.90	16. Beans	5.00
5. Carrot	11.30	17. Peas	4.80
6. Asparagus	10.85	18. Rice	3.67
7. Rutabega	9.04	19. Oats	3.60
8. Horse-radish	8.20	20. Wheat	3.25
9. Turnip	8.08	21. Rye	2.90
10. Cucumber	7.30	22. Corn	2.20
11. Onion	6.04	23. Potato	1.00
12. Beet	6.02	24. Barley	.70

MAGNESIUM

1. Corn	15.50	14. Cucumber	4.15
2. Barley	12.50	15. Potato	4.05
3. Wheat	12.10	16. Cauliflower	3.70
4. Rye	11.22	17. Savoy cabbage	3.60
5. Rice	11.10	18. Radish	3.10
6. Peas	8.00	19. Tomato	3.07
7. Beans	7.15	20. Beet	3.01
8. Oats	7.10	21. Horse-radish	2.90
9. Spinach	6.40	22. Lentils	2.50
10. Lettuce	6.20	23. Onion	2.09
11. Red cabbage	4.44	24. Rutabaga	2.08
12. Carrot	4.40	25. Turnip	2.07
13. Asparagus	4.30		

IRON

1. Lettuce	5.20	11. Wheat	1.30
2. Asparagus	3.40	12. Oats	1.20
3. Spinach	3.35	12. Rye	1.20
4. Radish	2.80	13. Potatoes	1.10
5. Onion	2.30	14. Cauliflower	1.00
6. Lentils	2.00	15. Carrots	1.00
7. Horse-radish	1.94	16. Corn	0.80
8. Savoy cabbage	1.78	16. Peas	0.80
9. Barley	1.70	17. Beans	0.50
10. Rice	1.40	18. Rutabega	0.05
10. Cucumber	1.40	19. Beet	0.03

PHOSPHORUS

1. Rice	53.76	13. Potatoes	16.90
2. Rye	47.70	14. Savoy cabbage	14.75
3. Wheat	47.20	15. Carrots	12.80
4. Corn	46.60	16. Rutabega	11.07
5. Beans	38.90	17. Turnip	11.04
6. Lentils	36.30	18. Radish	10.90
7. Barley	32.80	19. Spinach	10.25
8. Oats	25.00	20. Lettuce	9.20
9. Cauliflower	20.20	21. Beet	9.04
10. Cucumber	20.00	22. Tomato	8.07
11. Asparagus	18.60	23. Horse radish.....	7.70
12. Onion	17.35		

SULPHUR

1. Horse-radish	30.80	10. Onion	5.68
2. Red cabbage	15.30	11. Lettuce	3.80
3. Cauliflower	13.00	12. Peas	3.40
4. Savoy cabbage	8.20	12. Beans	3.40
5. Spinach	6.90	12. Wheat	3.40
5. Cucumber	6.90	13. Barley	3.00
6. Potatoes	6.53	14. Oats	1.80
7. Radish	6.50	15. Rye	1.30
8. Carrots	6.45	16. Corn	0.80
9. Asparagus	6.20	17. Rice	0.50

SILICON

1. Oats	39.20	11. Rice	2.60
2. Barley	28.70	12. Carrots	2.40
3. Horse-radish	12.70	13. Corn	2.10
4. Asparagus	10.10	14. Wheat	2.00
5. Onion	8.50	14. Potatoes	2.00
6. Lettuce	8.10	15. Rye	1.40
7. Cucumber	8.00	16. Radish	0.90
8. Savoy cabbage	4.78	16. Peas	0.90
9. Spinach	4.50	17. Beans	0.65
10. Cauliflower	3.70	18. Red Cabbage	0.50

CHLORINE

1. Red cabbage	13.65	11. Cauliflower	3.40
2. Radish	9.15	12. Onion	2.40
3. Savoy cabbage	7.90	13. Corn	1.90
4. Lettuce	7.65	14. Beans	1.80
5. Cucumber	6.60	15. Peas	1.60
6. Spinach	6.30	16. Horse Radish	0.90
7. Asparagus	5.90	16. Oats	0.90
8. Lentils	4.63	17. Rye	0.50
9. Carrots	4.60	18. Wheat	0.30
10. Potatoes	3.50	19. Rice	0.10

The mineral elements or "ash" constituents of plants are usually combined with oxygen to form the various "cell salts," acids, etc., of the fruit or vegetable.

As we have already seen, the "natural" way of using fruits or vegetables is to eat them as they have been prepared by nature. All the succulent vegetables can still be eaten in that condition, but those that are allowed to harden cannot be eaten until softened by the application of artificial heat. The ordinary methods of preparing vegetables robs them of most of their flavor and natural seasoning and they taste insipid unless dosed with artificial flavorings, condiments, sauces, etc. The leaf vegetables contain very little body-building or heat and energy-making material, and are chiefly valuable because of their mineral salts and acids. These valuable constituents are extracted from the vegetable by boiling, and are usually thrown away in the water in which the vegetable was boiled. This leaves nothing for the table except the "husk" or woody fibre of the plant, which is of no value except for its broom-like action on the bowels. The longer vegetables are cooked the more table salt and other artificial flavorings will they require to make them palatable, and the more of these that are used the more indigestible do the foods become.

Boiling is the most extravagant, as well as the most unwholesome method, of preparing vegetables. In experiments made at the Government experiment stations it was learned that one-third of the total food value of cabbage is lost by boiling; that 8 per cent. of the body-building material, 19 per cent. of the cell-salts, and 30 per cent. of the starch content are extracted from potatoes by boiling; and that carrots, when cut into small pieces and boiled, lose 30 per cent. of their food value. The loss of vegetable sugar when carrots are boiled was almost one pound to the bushel.

The most healthful as well as the most economical method of preparing vegetables is to steam or bake them. The loss of nutritive value by steaming is only one-third of that which is lost in boiling; and in baking there is practically no loss of material except the water which is driven off by the heat.

The following tables indicate the approximate length of time required for the digestion of various fruits, nuts and vegetables in the average healthy stomach. The time will

vary, of course, with the degree of appetite, mental condition, etc.

FRUITS		Hours and Minutes
1. Lemon		1.00
2. Banana		1.20
Orange		
3. Apple		1.30
Apricot		
Blackberry		
Peach		
Pear		
4. Plum		1.45
5. Raspberry		2.00
Pomegranate		
Olive		
Date		
Grape		
Cherry		
Currant		
Cranberry		
6. Fig		2.30
Pineapple		
Prune		
7. Raisin		3.00
NUTS		
1. Almond		2.30
2. Pecan		3.00
Butternut		
Brazilnut		
Hickorynut		
3. Chestnut		3.30
Cocoanut		
4. Walnut		4.00
LEAF, FRUIT AND FLOWER VEGETABLES		
1. Asparagus		1.15
2. Watermelon		1.20
3. Watercress		1.30
Lettuce		
Tomato		
4. Cauliflower		2.00
Brussels Sprouts		
Squash		
Pumpkin		
Horseradish		

5. Raw cabbage	2.30
Rhubarb	
Spinach	
6. Celery	3.00
7. Cucumbers	4.00
8. Boiled cabbage	4.30

TUBERS

1. Baked white potato	2.30
Boiled parsnip	
2. Sweet potatoes	3.00
Boiled carrots	
3. Boiled white potato	3.30
Boiled turnip	
4. Boiled beets	3.45
5. Boiled onions	3.50
6. Radishes	4.00

LEGUMES

1. Beans	2.30
2. Peas	2.40
3. Lentils	2.50

CEREALS

1. Rice	1.00
2. Sago	1.45
3. Tapioca	2.00
Barley	
4. Rye	3.00
Wheat	
5. White corn meal	3.15
Oatmeal	
6. Yellow cornmeal	3.20
7. Buckwheat	3.30

CHAPTER NINE

BREAD

"Give us this day our daily bread."—Matt. 6:11.

As Jesus' disciples walked with Him through the wheat field they plucked the soft, green kernels of wheat from their stalks and ate them. This was the original and natural way of eating the cereals, fresh and tender and full of life as they are prepared by nature. This was all very well as long as man was settled in one place and had an abundance of his natural and proper food, but when he began to wander far from the place of his origin and to establish himself in colder climes, it became necessary for him to save and dry the grains that furnished him so large a part of his nourishment. These dried grains were at first simply softened by soaking them in water, but as man became more and more pressed for time, the work of preparation had to be hastened, and they were boiled. These whole grain cereal mushes were the original "breakfast foods" and the forerunners of all the breads of the world.

The baked cake or loaf must have been the result of some early day culinary accident. A neglected vessel of cooking grain boiled dry one day and the mush had been baked into a rude cake in the bottom of the pot by the time the cook's attention was attracted to it. Having tasted this baked mush and found it more palatable than when simply boiled, the cook no doubt presented it as a new delicacy invented by himself. This new method of preparation made the grain more palatable, and it possessed the advantage of enabling man to carry with him a large stock of ready prepared food.

This newly discovered food was made at first much as the wild tribes of the earth make their breads today, the grain being simply crushed between two stones, mixed into a paste with water, and baked in the ashes of the camp fire. This original form of bread is still exemplified by the "bannock" of Scotland, the "damper" of Australia, and the "hoe cake" of America.

The first breads were, of course, unleavened. The art of making a thick and porous loaf by partially fermenting

the dough and filling it with carbonic acid gas was a later, and, no doubt, another accidental discovery. Ferment bacteria are universally present in the air, and any starchy substance exposed to the air for a few hours, especially in a high temperature, will become infected and begin to ferment. A little unbaked bread paste that had been left over from the morning meal would, in a warm climate, have become infected by this "wild yeast," as it is called, by evening and when added to the next batch of dough would, if wheat or rye were used, leaven the whole mass. In some such way must man have received his first "raised" loaf. It was in the very early days, however, since the ancient Egyptians cultivated the wild yeast germs, and ancient Israel ate leavened bread in Egypt.

Bread is first mentioned in the Bible in Genesis 18:6. This was undoubtedly unleavened bread, since it was to be made "quickly." The Hebrews made bread of barley and rye or "spelt," as well as of wheat, but their best breads were made of wheat; barley bread was eaten chiefly by the poor. Only the rye or the wheat bread was leavened. The leaven ordinarily used was a lump of old dough in a high state of fermentation, which was mixed with the fresh dough after it had been kneaded. The Jews always used their hands in kneading the dough, but in Egypt it was sometimes kneaded with the feet.

No leaven was permitted in any of the offerings made by the Jews to Jehovah; and during the Passover they were commanded to put every particle of leaven from their homes. We realize the significance of this when we learn that leaven is a ferment and that fermentation is the first stage of decomposition, the first step in the process of disintegration by which organized substances are returned to their original elements. A fermenting or decomposing substance is in a state of corruption, a state of decay, in process of dissolution—it is no longer living, but dying. Leaven, therefore, becomes a perfect type of sin, the transgression of the laws of life that leads to mental and physical dissolution.

All of the grains and most of the legumes, tubers and nuts are used in bread-making. Pea, bean and lentil flour, mixed with grains, is sold under various trade names as special food for invalids; bean flour is often mixed with wheat flour in the making of white bread. Potato flour is

often used as an adulterant in making bread from wheat flour. Cassava bread and cakes are made from flour made from the cassava root. Almond meal is used in the preparation of various biscuit and bread substitutes for diabetics. In Tuscany, chestnut flour is used for making bread and cakes. The flour is mixed with water and made into a dough, which is spread between chestnut leaves and baked. The heavy, black bread of Umbria is made of a mixture of wheat and acorn flour.

Yeast

The fermentation that raises a loaf of bread is essentially the same as that which takes place in the making of beer, brandy, wine or spirits, and that which occurs in the human stomach during an attack of indigestion. The yeast germ is a species of bacteria that feeds upon the sugar and starch of the flour and excretes carbonic acid gas and the substance we call "alcohol." The yeast germ multiplies very rapidly, and when the inoculated bread sponge is set in a warm place it soon begins to rise or "work," as the carbonic acid gas is produced and rises in the mass. This gas is uniformly distributed throughout the dough by kneading, and is prevented from escaping by the gluten of the flour. The heat of the oven drives most of the alcohol from the dough, and causes the carbonic acid gas to expand and make a nice light loaf. This gas leaves the bread as it cools after it is taken from the oven, and its place in the pores of the bread is taken by oxygen from the air. Fresh bread is not usually so well masticated as that which is cold and crumbly, and contains considerable carbonic acid gas; for which reason it is apt to cause indigestion.

There are various ways of preparing "cultures" of the yeast germ, or making yeast. The poor of France use the "sour dough" method of the ancient Egyptians, which is doubtless the oldest of all. The Scotch make an yeast called "barm" from malt, hops, flour and water. Boiling water is poured over crushed malt and hops. When this mixture has stood for some time the liquid is poured off and mixed with flour. After this mixture has stood for several days it is ready for use as yeast. The "wet yeast" of a quarter century ago was made by mixing hops or potatoes in water

and leaving the mixture stand in a warm place until it had fermented. The "compressed yeasts" of the present day are made by cultivating the ferment bacteria in a sweet liquid. This is thickened by the addition of meal or starch, dried and pressed into the familiar small cakes.

Baking powders are inorganic substitutes for the organic yeast bacteria. One of the first of these chemical compounds was a mixture of bicarbonate of soda (baking soda) and salt, called *sal aeratus* or "*salaratus*;" the best, and highest priced, of the modern brands are composed of bicarbonate of soda and cream of tartar; the majority are made of bicarbonate of soda and phosphate of lime (as a substitute for the cream of tartar) and adulterated with cornstarch. These chemicals when wet give off carbonic acid gas, the active agent in making the bread light and porous.

The advantage of the baking powder method is that it raises the bread without robbing the flour of the nourishing elements that are required for the growth and development of the yeast germ; neither does the baking powder produce any alcohol. Its great disadvantage is the fact that the mineral elements of which the baking powder is composed are left in the bread and eaten with it. These inorganic elements cannot be assimilated by a fleshly body, therefore act as a poisonous waste to harden the arteries or to settle in the joints and cause rheumatism.

The desire for a light, porous bread that would be subject to none of the unwholesomeness of either the yeast or the chemically raised breads led to the production of "aerated bread" by a method invented by Dr. Daughlish in 1856. This bread is made with water that has been impregnated with carbonic acid gas under pressure. The dough is also worked up under pressure and caused to expand by the gas when the pressure is removed.

The fermented or yeast raised breads are the most popular, both on account of the flavor imparted to them during the alcoholic fermentation and because they are more easily and more quickly masticated. But this leads to insufficient insalivation, and consequent alcoholic fermentation in the stomach with irritation of the mucus membranes and digestive and catarrhal troubles of various sorts. Foods that are too soft also lead to the decay of

the teeth. Unleavened bread, such as the Passover bread of the Jews, Pilot biscuit, whole wheat shredded biscuit and crackers are, without doubt, the most wholesome and healthful. Such breads are more easily and quickly prepared in the home, and compel the thorough mastication which insures the prevention of alcoholic fermentation in the stomach.

Baking Time Table

Bread.....	50 to 60 minutes
Biscuit.....	15 to 20 minutes
Cookies.....	15 minutes
Fruit Cake.....	2 to 3 hours
Gems.....	30 minutes
Gingerbread.....	25 to 30 minutes
Plain Cake.....	35 to 40 minutes

Eight Reasons for "Heavy" Bread

1. Flour poor in gluten.
2. Too much water added to the flour.
3. Too little water added to the flour.
4. Not enough yeast.
5. Poor yeast.
6. Dough not kneaded sufficiently.
7. Dough not raised enough.
8. Bread not baked long enough.

CHAPTER TEN

FLESH FOODS

"Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things. But flesh with the life thereof, which is the blood thereof, shall ye not eat."—Gen. 9:3, 4.

The vegetarian admits that flesh foods were permitted by God in the days of Noah but claims that this permission was given because man had fallen to such a low condition at that time that "every imagination of the thoughts of his heart was only evil continually." The Rev. James Clark, an able vegetarian writer, whose argument this is, continues as follows: "And therefore God, stooping to mankind in their degradation, required from them a lower standard of life in all things."

Mr. Clark overlooked the fact that this permission to eat flesh was not given to those evil-minded persons who were destroyed from off the face of the earth by the waters of the deluge but to Noah, of whom it is written that he was "a just man and perfect in his generations." This argument, therefore, falls to the ground, since it was not those who had fallen lowest and become the most degraded who were given permission to eat "all things" but those who were the most just and righteous of all the inhabitants of the earth at that time. Mr. Clark also claims that the commandment, "Thou shalt not kill," prohibits the slaughter of the beast of the field as well as the murder of man. This is another manifest error, for this commandment was almost immediately followed by a command to make burnt offerings of sheep and oxen. It was during this same time, too, that man was divinely instructed concerning the kinds of animals that were to be eaten as food and the kinds not to be eaten. There is no Scriptural support for the contention that flesh foods are not to be eaten at the present time. The testimony of the Scriptures is all to the contrary. God Himself fed the prophet Elijah bread and meat; the same God provided quail for Israel wandering in

the wilderness, and the Son of God fed the multitude upon barley bread and fish.

Vegetarianism draws its recruits from the ranks of those who have abused their privilege of flesh eating. To all such a strictly vegetarian diet is extremely beneficial for a time as a remedial treatment.

The diet reformers who claim that meat, eggs, milk, butter and cheese are the cause of all our mental and physical ills tell us that our only hope for health, happiness and length of days lies in "getting back to nature" and living upon what they believe to have been man's natural foods. Getting back to nature means, to them, accepting the wild animal as a guide in matters dietetic. As one reformer puts it: "In order to find out the conditions of health, we have no alternative but to turn to animals for instruction. They live naturally, and have always done so, in close contact with nature; and they must be nature's exponents to us as far as physical health is concerned. In fact they actually represent Nature to us, for sound instinct is unerring, but reason and judgment are not."—Dr. A. F. Reinhold in "Nature Versus Drugs."

Dr. Reinhold makes the very natural mistake of thinking that creatures who live free and in close contact with the uncultivated earth necessarily live in harmony with the laws of nature. But such is not the case. Wild animals are no more "natural" than "wild men." Both are the result of man's fall from perfection. If the forests and jungles of the earth were as perfectly developed as the Garden of Eden, every beast of the field and fowl of the air would "live naturally" and upon its original diet, the "herb of the field." But all the earth outside of Eden was left in a crude, undeveloped condition. The lower animals are as much creatures of their environment as man, but without man's power to cultivate and improve their surroundings. They must live as their environment permits them to live and eat the foods it supplies them with. Lack of natural food has perverted the instincts of the "wild" animal as much as it has the instincts of the "wild" man who forsakes a diet of fruit and vegetables for one of fried missionary.

The problem of diet is not so much a matter of ascertaining the nature of man's original foods as it is of determining what foods are most suitable and beneficial to him

in his present condition and environment. Flesh foods were unknown in the Garden of Eden but those who dwelt there did not live between four walls of brick or stone or spend their days in hard labor and their nights in a pursuit of pleasure. Fruits and vegetables were the most suitable foods for perfect human beings situated as our first parents but they would be most unsuitable for the imperfect men and women of the present day, who are so differently situated. The care and work-free native of the tropics may still get along very nicely with a diet of fruits and green vegetables, but those who inhabit the colder climes and whose lives are hurried and worried require much more heat and energy than can be supplied by such a diet. Neither have such persons the time or vitality to spare for the digestion of such flesh substitutes as the dried legumes or nuts. They must secure the greater portion of the body-building and energy-making material they require from substances that are easily and quickly digested and at the same time stimulating. Flesh foods and certain animal products, therefore, are a necessary part of the diet of the normally healthy and active person of the present day.

No meat was eaten until after the deluge, at which time the Creator gave man permission to eat the flesh of every beast of the earth, every fowl of the air, and every fish of the sea. Permitted to eat meat, man was no longer confined to his cultivated "home-land" or to the warmer climes where fruits and the herb of the field grew wild; henceforth he could cross the seas and the deserts and penetrate into the coldest regions of the earth, for he could live and work and multiply wherever any kind of animal life was found.

Only one restriction was placed upon man in his use of a flesh diet, he must not use the blood of any animal. Flesh drained of its blood is a wholesome food, that in which the blood is allowed to remain is unwholesome, for the blood of any animal contains the waste products of animal life as well as the newly prepared material for the rebuilding of the animal body. The vegetarian makes much of this physiological fact as a health argument against the use of flesh foods, but this objection is overcome when the flesh is prepared as the Creator commanded.

All the lower animals were used as food until the giving of the Law at Sinai, at which time Jehovah declared

that certain animals should henceforth be called "unclean" and their flesh no longer used as food by those who were seeking to live in harmony with the laws of life and health. This distinction and prohibition was made necessary by changed conditions. In the early days all the lower animals fed alike upon the herb of the field, but as the earth became more densely populated many of the animals not domesticated and fed by man were compelled to become eaters of flesh or scavengers of the refuse from man's table. The flesh of all such animals would be detrimental to human health and was, therefore, forbidden. These animals were not unclean of themselves, for the Apostle Paul informs us that he had been convinced by the Lord Jesus that nothing was unclean of itself; they had simply been made unclean by force of circumstances over which they had no control.

The followers of Jesus were not bound by the Mosaic Law, for they were not seeking eternal human life like the Jew but to become partakers of the divine nature (II Peter 1:4). The Christian, therefore, might eat what he chose without endangering his eternal destiny as a spirit being, though the eating of unfit foods would injure him physically as quickly as the Hebrew or any other person. In this way errors of diet might easily hinder his spiritual advancement, since that which affects the body must also affect the mind, and it was to remind the Christian of this that St. Paul wrote to some of them as follows: "Whether therefore ye eat or drink, or whatsoever ye do, do all to the glory of God."—I Cor. 10:31.

Flesh foods will be permissible as long as the need for them continues, until man has finished his work of subduing the earth and making it like the Garden of Eden. When that time comes both man and beast will return to their original diet; man will again use as food only the herbs that grow upon the face of the earth and the fruit of the trees and the "wolf shall dwell with the lamb, and the leopard shall lie down with the kid; and the calf and the young lion and the fatling together. And the cow and the bear shall feed; their young ones shall lie down together; and the lion shall eat straw like the ox."—Isaiah 11:6, 7.

Eggs

The egg of the animal kingdom corresponds to the

seed in the vegetable realm in that it also contains the germ of a new individual and all the material necessary for its development, but it is unlike the seed in being rich in fat and moisture and almost altogether lacking in the starch and sugar heat and energy making materials.

The eggs most generally used by man are those of domestic poultry, that of the chicken being most commonly eaten. An average chicken egg is about $2\frac{1}{4}$ inches in length and $1\frac{3}{4}$ inches in diameter at its broadest point, and weighs about two ounces. It is constituted as follows:

Shell	11	per cent.
Yolk	32	" "
White	57	" "

Composition of the Hen's Egg

Water	73.70
Albumen	12.55
Fat	12.10
Starch and Sugar	00.55
Mineral Matter	01.10

Eggs with brown shells have a less heavy shell than those with white, contain a little less water and are a little richer in body-building material and fat.

The yolk of the egg contains all the fat, most of the mineral matter not contained in the shell and most of the body-building material. The albumen or white of the egg contains twice as much water as the yolk, some body-building material and a considerable quantity of sulphur and phosphorus.

Mineral Salts Content

Potassium	17.40
Sodium	22.90
Magnesium	01.10
Calcium	10.90
Iron	00.40
Phosphorus	37.60
Sulphur	00.40
Chlorine	09.00
Silicon	00.30

Most of the calcium is in the shell of the egg, in combination with phosphorus, magnesium and carbon, as calcium

carbonate, magnesium carbonate and calcium phosphate.

Eggs with deeply colored yolks are the richest in iron, which indicates the presence of green feed in the ration.

Eggs are a highly concentrated food and contain no indigestible fiber to supply bulk and stimulate the muscular activity of the stomach and intestines. They should be eaten with proportionately large quantities of bulky and much less nutritious foods. Otherwise there will be a tendency to take more eggs at a time than are healthful, which will result in an over-supply of body-building material, fat and cell-salts, and over-working the kidneys and liver. An excess of cell-salts or mineral matter induces hardening of the arteries and the various other symptoms of old age. One egg is sufficient for the normal person not actively engaged, two are sufficient for those who work hard with either head or hands.

Raw whipped eggs are most easily and quickly digested and require the expenditure of the least vitality. Hard-boiled and fried eggs are the most difficult to digest and require considerable time and the expenditure of considerable vitality. The following table shows the length of time required for eggs differently prepared to leave the stomach:

Raw whipped egg	1½ hours
Poached or raw egg	2 hours
Soft boiled	2¼ hours
Hard boiled or fried.....	3 hours

Experiments have proven that less of the egg is assimilated by the body when it is fried than when prepared in any other manner. The fried egg, therefore, is the least healthful, since it gives the least nourishment for the greatest expenditure of time and vitality.

Milk

Milk is not a beverage but a dilute food containing all the elements required by the young animal for whom it is provided. It is the natural and perfect food of the new-born mammal, the milk of each species being particularly adapted to the young of that species. The richest milk comes from the dog, the poorest from the horse.

Although milk is the characteristic food of childhood, the milk of certain kinds of animals has long had a place in the diet of the adult. Ancient Israel used the milk of

sheep, goats and camels, as well as that of the cow, all of which are still used in eastern countries. Fermented mare's milk called "kumyss," is used in Russia as a food for phthisical patients. An imitation is made in the United States by fermenting cow's milk.

The chief bulk of all kinds of milk is water, the solids forming only ten to sixteen per cent. Human milk contains more water than that of either the cow or the goat, the amount in one pound of each being as follows:

Human milk	14 ounces
Cow's milk	13 ounces
Goat's milk	10 ounces

The calf and the kid are active from birth and require a food richer in muscle-making material than is needed by the human babe, for which reason the milk of the cow and goat is richer in body-building material than that of the human mother. The following table shows the difference between human and cow's milk:

	Human	Cow
Body-building material	2.36	3.55
Fat	3.94	3.70
Sugar	6.23	4.88

Mineral Salt Content

	Human	Cow
Potassium	33.80	24.67
Sodium	9.12	9.70
Calcium	16.70	22.05
Magnesium	2.16	3.05
Iron	.22	.55
Phosphorus	22.66	28.45
Sulphur	.95	.30
Silicon	.02	.04
Chlorine	18.38	14.28

No milk can be so well suited to the human infant as that of its own mother, which continually changes as to the proportions of its ingredients, according to the different needs of the growing child. Human milk is also much more easily digested. It forms very small, soft curds which are easily broken up by the digestive fluids while the curds of cow's milks are large and tough, suited only to the four stomachs of the calf. Cow's milk can never be a substitute

for mother's milk, but where mother's milk cannot be obtained and either cow's milk or goat's milk must be used, one-third water and a little sugar should be added.

Milk contains all the classes of nutriment in the proper proportions to serve as a complete food for the young animal for whom it is intended but contains too large a proportion of water to make it a complete food for the adult. About five quarts per day would be needed to supply the nutriment required by the adult, and as milk contains no refuse or waste material such a diet would provide nothing to stimulate the activity of the stomach and intestines and indigestion and constipation would result.

One pint of cow's milk contains about as much nutriment as six ounces of meat or three ounces of bread, but not in the same proportions. The heat and energy value of one pint of cream equals that of four and a half pounds of potatoes or a pound and one-eighth of bread. Skimmed milk contains nearly ten per cent. of the body-building elements of the whole milk.

When milk is used by the adult it should be taken as the young and toothless animal takes it, in small sips, and only a little swallowed at a time. Every swallow of milk is curdled soon after it enters the stomach and the greater the quantity swallowed at one time the larger and more difficult to digest will each lump be. The length of time ordinarily required for the stomach digestion of either whole milk, skimmed milk, or buttermilk, is two hours. When milk is heated or boiled its composition is so changed as to make its body-building elements much more difficult to digest.

Milk should never be taken at the same meal with cheese, eggs, meat, beans or any other food rich in body-building material. The body can use only so much of any element at a given time, and will digest and assimilate only the quantity of which it has need. The difference in taste of two foods of the same class leads to overeating of that class of food and that which is easiest to digest will be digested and assimilated while the remainder will be left to ferment and decay. The mixing of meat and milk is prohibited by the Bible, "Thou shalt not seethe a kid in his mother's milk," being one of the dietary commands of the law that was given Israel. Milk and leaf vegetables should

not be taken at the same meal or mixed together in the stomach. Milk digests quickly while vegetable substances digest slowly. Those who are troubled with catarrh or constipation should use milk sparingly or not at all.

Preserved milks are not so wholesome as fresh milk because the cooking necessary to their preparation makes them more indigestible. When fresh milk cannot be obtained evaporated milk should be used in preference to condensed.

Milk is more apt to become unwholesome than almost any other article of food. It is a substance composed of materials drawn from the blood of the animal and it will be infected with the germs of any disease from which the animal may be suffering. It is also susceptible to contamination from unhealthy persons who handle it and from the use of infected water in cleaning the milk vessels. It is well known that milk has often been a carrier of infection, and the greatest care should always be taken to insure its absolute cleanliness. It is also made less wholesome by adulteration. The chief adulterations are the removal of a portion of the fat, the addition of water and corn starch, and the addition of preservatives. The latter is the most injurious to health, as preservatives taken even in small quantities cause injury in time.

Cheese

Cheese is a very concentrated substance manufactured from artificially curdled or coagulated milk and afterward partially decomposed. The milk of the cow, sheep and goat is used, and various herbs are often added as a flavoring. In Holland the milk is curdled by the addition of acid, in Switzerland by the addition of sour milk, and in Britain and America by the use of rennet.

The most wholesome cheese is the sour milk or "cottage cheese," and this ceases to be wholesome when baked and served in the form of "cheese cake." All ripened cheeses are foods that have become more or less decomposed and have, therefore, become less healthful foods. The chemicals often used in the preparation of cheese make it injurious to health, especially for those with weak digestive organs. Cheese leaves the stomach of the normally healthy person in from four and a half to five hours.

Butter

Butter is the fat content of the milk, extracted by the process known as churning. It is made from the milk of the sheep, goat and camel as well as from that of the cow. Butter has been known and used from the most remote times. The ancient method of making butter was to place the milk or cream in a leather bag, hung on three poles erected for the purpose, and drawn to and fro by two women.

The best butter of the present day has a faint, sweet odor and a soft delicate flavor. It is sometimes adulterated with lard or by mixing with it a butter of poorer quality, or by the addition of chalk. It is often colored with carrots, yellow ochre or the yolk of egg. To test butter, melt a small quantity in hot water. If there is coloring matter in the butter it will separate and join the water; if it is adulterated, the adulterants will fall to the bottom of the vessel in which the test is made.

Salt is added to butter as a preservative, but makes it more unwholesome as an article of diet.

Butter is a heat and energy food but when used in excess of the needs of the individual throws an extra load upon the liver.

Since all animal products are more subject to contamination than vegetable, the butters now made from vegetable fats are generally recognized as being more healthful than those made from the fats of an animal. There are many artificial butters now on the market. Some of them are made of beef suet and milk, others of vegetable oils and the fat of nuts. The former are no more wholesome than ordinary butter, and not as palatable, though cheaper; the latter are healthful as well as inexpensive. Vegetable substitutes for lard are preferable for the same reason.

Diet reformers tell us animal fats are unhealthful because the Jews were forbidden by the Law to eat them. This prohibition, however, applied only to the fat of animals which were offered in sacrifice. That other fats were permitted is shown by Nehemiah 8:10, where the people are bidden to go their way and "eat the fat and drink the sweet, etc."

Fish

According to the Genesis account fish were the first

earthly living creatures brought into existence. We therefore claim Scriptural authority for giving them first place among the flesh foods. The Mosaic law is still the best guide as to the kinds of fish that are healthful articles of diet. Those which have neither fins nor scales are unwholesome because they are, as a rule, the scavengers of the waters. It is well known that serious and even fatal cases of poisoning, often follow the eating of clams, mussels, oysters, lobsters and crabs. The two latter are generally recognized as indigestible foods, and oysters are known to be carriers of typhoid fever germs.

All varieties of wholesome fish digest about as thoroughly as lean beef, but digest more quickly and cause the excretion of a smaller amount of uric acid than any other meat.

Fish that are allowed to die slowly undergo decomposition more readily than those that are killed quickly. The most wholesome fish are those killed just a short time before eating. The Jew, to this day, purchases his fish alive and has it killed just before it is prepared for the table, while the Gentile is satisfied to eat the fish that has "died of itself," smothered to death in the hold of the fishing vessel, contaminated by the dust of the wharf or the city street upon which it has been dumped, and by the grime of the many hands through which it has passed. Or he eats it after it has reposed for half a year in cold storage.

The flesh of fish contains less fat than that of land animals and should always be supplemented by such foods as bread, butter, potatoes and green vegetables.

Fish should never be eaten at the same meal with any other kind of meat, eggs, cheese, milk, beans or lentils. Tea should never be taken at a meal during which fish is eaten, as the active principle of the tea tans the flesh of the fish and renders it impervious to the digestive fluids.

Pickled fish are unwholesome. Canned fish become poisonous if not removed from the can as soon as it is opened. Smoked or dried fish are the best substitutes for fresh.

The following table shows the percentage of body-building material and fat contained in the most important and most generally used food fishes. The figures on the left

indicate the rank or standing of the fish named in the body-building elements:

Fish Eggs		
1. Caviar (Sturgeon roe)	30.00	19.7
2. Shad roe	23.5	3.8

Fish	Body-building	
	Material.	Fat.
1. Spanish mackerel	16.5	7.2
2. Pollock	15.4	0.6
3. Sturgeon	15.1	1.6
4. Maine Salmon	15.0	9.5
5. Salt water eel	14.8	7.2
6. Whitefish	12.8	3.6
6. Yellow perch	12.8	0.9
7. Pickerel	12.0	0.2
8. Brook trout	11.9	1.3
9. Mackerel	11.6	3.5
10. Herring	11.2	3.9
11. Cod	11.1	0.1
12. Lake trout	11.0	6.2
13. Shad	10.6	5.4
14. Weakfish	10.4	1.3
15. Butterfish	10.3	6.3
16. Cusk	10.1	0.1
16. Smelt	10.1	1.0
17. Bluefish	10.0	0.6
18. Mullet	09.9	2.4
19. Alewife	09.8	2.4
20. Turbot	08.9	8.7
21. White Perch	08.8	1.8
22. Sea bass	08.7	0.2
23. Porgy	08.6	2.4
24. Black bass	08.5	0.4
24. Red Grouper	08.5	0.2
25. Tomcod	08.4	0.3
26. Hake	07.3	0.3
27. Flounder	06.4	0.3

Shell Fish (in the shell)

	Body-building	
	Material.	Fat.
1. Crab	07.9	0.9
2. Lobster	05.9	0.7
3. Long Clam	05.0	0.6
4. Mussel	04.6	0.6
5. Crawfish	02.1	0.1
5. Round Clam	02.1	0.1
6. Oyster	01.2	1.3

Canned Fish

1. Shrimp	25.4	1.0
2. Abalone	21.7	0.1

Reptiles, Etc.

1. Frog's legs	10.5	0.1
2. Terrapin, in shell	05.2	0.9
3. Green turtle	04.7	0.1

The wholesomeness of fish may be tested by placing them in a pan of water before cleaning. If the fish sink to the bottom of the pan they may be considered wholesome, if they float in the water they are beginning to decompose.

Fowl

The winged fowl were brought into existence during the same creative day as fish and before the creation of the beasts of the field. They are closely allied to the reptiles and form the connecting link between them and the beasts of the field. The birds most generally used as food are the wild fowl and domestic poultry named in the following table, which indicates the percentage of body-building material and fat of the edible portions of each. The figures on the left show the rank or standing of the food in body-building material, those on the left the per cent. of body-building material and fat.

	Body-building	
	Material.	Fat.
1. Quail	25.0	6.8
2. Pheasant	24.4	4.8
3. Guinea hen	23.1	6.5
4. Pigeon	22.8	11.0
5. Turkey	22.2	18.9
6. Chicken	20.4	19.2
7. Duck	18.3	19.0
8. Goose	16.6	28.7

Wild fowl lead the most active lives and develop the most muscle and the least fat. As a rule they also live upon active insects and seeds which are rich in body-building material. Their flesh, therefore, is richer in the body-building elements and poorer in heat and energy making mate-

rial than that of domestic poultry. The same rule applies to the domestic fowl, the more sluggish and inactive kinds containing less body-building material and more fat than the active. A glance at the above table will show that when Jehovah sent quail to Israel wandering in the wilderness He sent them fowl most suited to their physical needs.

Quail, called partridge in some sections and Bob White in others, are natives of America.

The pheasant is a native of Asia.

The guinea fowl are natives of Africa.

The pigeons used as food have been developed from the wild rock dove.

Turkeys are natives of North America.

The chicken has been domesticated from the wild fowl of Asia.

Most breeds of domestic duck have been developed from the wild mallard.

The goose was known and used as food in ancient Egypt. It is more used now in Germany than elsewhere. The Germans preserve the fat and often use it in place of butter. The fat is also used by orthodox Jews as a cooking fat. Pate de foi gras is a preparation made of diseased goose livers. Geese are very long lived, but their flesh becomes too tough for table use after they are three years old.

Peafowl and swans were both eaten in the earlier days. Young swan are still eaten in some parts of Europe.

The brain of the chicken is cooked and eaten in Europe, as are also the feet. The comb of the rooster is eaten in France. The Germans cook and eat the partially digested green food taken from the digestive organs of certain game birds. Chicken livers and hearts are esteemed a delicacy by many Americans.

In warm regions fowl are often cooked before the animal heat has left the body. Such fowl have a different flavor than those which are not cooked until after rigor mortis has set in. When the bird is not to be cooked immediately after killing it should be kept in a cool place until used, as the animal heat, if retained in the body, will hasten decomposition. When the stiffened flesh of a cooled fowl begins to relax and grow soft it indicates the beginning of decomposition.

Poultry is somewhat more easily digested than beef,

mutton or pork. Boiled fowl leaves the stomach more quickly than that which has been roasted.

The dark meat is always richest in body-building material.

Young fowl are poorer in body-building material but are more easily digested.

The average time required for the stomach digestion of the various kind of fowl for which figures are available is as follows:

Goose	2½ hours
Chicken	2¾ hours
Turkey	3½ hours
Domestic duck	4 hours
Wild duck	4½ hours

This time will be increased or shortened according to the health of the individual, the length of time since the previous meal, the amount of exercise taken, quality of the air breathed, keenness of the appetite, mental condition, etc.

The following table shows the relative value of different cuts and parts of the animal in body-building material and fat:

	Body-building	
	Material.	Fat.
1. Ox tails	26.6	6.3
2. Shank	21.4	8.1
3. Top of round	20.9	10.6
4. Neck	20.7	12.7
5. Bottom of round	20.4	8.6
5. Liver	20.4	4.5
6. Flank	19.6	21.1
7. Chuck	19.2	15.4
8. Sirloin steak	18.9	18.5
8. Tongue	18.9	9.2
9. Rump	18.7	23.1
10. Ribs	17.8	24.6
11. Plate	16.8	26.9
11. Sweetbreads	16.8	12.1
11. Tripe	16.8	8.5
12. Kidneys	16.6	4.8
13. Tenderloin	16.2	24.4
14. Heart	16.0	20.4
15. Brisket	15.8	28.5
16. Brain	8.8	9.3

Lamb

1. Liver	23.1	9.0
2. Hindquarter	19.6	19.1
3. Breast	19.1	23.6
4. Loin	18.7	28.3
5. Leg	18.6	22.6
6. Forequarter	18.3	25.8
7. Shoulder	18.1	29.7
8. Neck	17.7	24.8
9. Side	17.6	23.1
10. Heart	16.6	12.6
11. Kidneys	16.5	3.2

Pork

1. Liver	21.3	4.5
2. Tenderloin	18.9	13.0
3. Flank	18.5	22.2
4. Chuck	17.3	31.1
5. Heart	17.1	6.3
6. Loin chops	16.4	32.0
7. Feet	15.8	26.3
8. Fresh ham	15.7	33.4
9. Kidneys	15.5	4.8
10. Head	13.4	41.3
11. Shoulder	13.3	34.2
12. Brain	11.7	10.3
13. Tail	4.8	77.1

Preserved Meats

	Body-building	
	Material.	Fat.
1. Pure ham sausage	32.3	27.2
2. Dried beef	30.0	6.5
3. Wienerwurst	28.0	22.1
4. Summer sausage	26.0	44.5
5. Bologna sausage	18.7	17.6
6. Fresh pork sausage	18.0	44.2
7. Smoked ham	16.5	38.8
8. Corned beef	15.6	26.2
9. Smoked shoulder pork	15.5	41.0
10. Frankfort sausage	10.6	16.6
11. Smoked bacon	10.5	64.8
12. Lean salt pork	8.4	67.1
12. Dry salt bellies	8.4	72.2

The average time for stomach digestion of the meats for which figures are available is as follows:

1. Brains	1 hour
2. Beef liver	2 hours
3. Roast beef	3 hours

3. Broiled beef steak	3 hours
3. Boiled lamb	3 hours
3. Stewed pork	3 hours
4. Roast mutton	3½ hours
4. Broiled pork	3½ hours
5. Fresh sausage	3 hours, 20 min.
6. Fried lean beef	4 hours
6. Fried heart	4 hours
7. Fried salt pork	4¼ hours
7. Pork steak	4¼ hours
7. Corned beef	4¼ hours
8. Boiled salt pork	4½ hours
8. Mutton suet	4½ hours
9. Roast pork	5¼ hours
10. Beef suet	5½ hours

The average person in normal health digests about 97 per cent. of the body-building material in flesh foods and about 95 per cent. of the fat, irrespective of the length of time required for digestion.

An increase of flesh, which means an increase of lean meat or muscular tissue, cannot be secured by the adult by eating more body-building foods than are made necessary by the daily wear and tear of the organism. To build flesh he must build muscle, and this can be accomplished only by increased exercise of the muscle he already has. When fats, sugars and starches, the carbon containing, or heat and energy making foods, are taken in excess of the body's present needs they are, if digested, stored away in the body in the form of fat to serve as a reserve supply of fuel. But this does not occur when an excess of body-building foods is taken. The tissues will accept and use only the quantity required for their existing needs. Any surplus will be left floating in the blood stream to be burned for heat and energy.

Burning body-building foods for heat and energy is expensive, even if it were not inimical to health, since the fats, starches and sugars are always lowest in price. But the burning of body-building material in the body is dangerous to health because it contains about ten per cent. of nitrogen, an incombustible and very inert element. Substances containing nitrogen cannot be entirely consumed like the starches, sugars and fats, which are composed of carbon, oxygen and hydrogen, but leave behind a solid "clinker" which must pass through the liver and be expelled from the

body by way of the kidneys. Therefore the long continued overeating of foods rich in body-building material will so overwork these organs as to cause them to break down and become diseased. It is claimed that a continued over-indulgence in foods rich in body-building material will pervert the eyesight by bringing about a change in the axis of the eye.

Dulness, apathy, twitching of the muscles of the face and hands, persistent headache, often extending to the neck, and urine strong with ammonia, are indications of an over-indulgence in body-building foods to an extent that is injuring the liver and kidneys. Dizziness, local palsies, epilepsy, blindness, deafness, convulsions, hysteria and insanity are results that may ensue if the over-indulgence is too long continued. Nine times out of ten nephritis (inflammation of the kidneys) causes unpleasant delusions, usually that of being persecuted. Medical authorities agree that sufferers from kidney diseases are particularly apt to have the hallucination of being pursued by demons.

All authorities are agreed that most persons eat a great deal more body-building foods than needed, and many careful experiments have been made in order to determine the approximate quantity required at different ages and under various circumstances. The standard established as a result of the investigations of Professor Carl Voit, of Munich, was accepted for many years as giving the minimum food requirements for a healthy man. Professor Voit's standard calls for a daily ration that supplies

4 ounces of body-building material,

2 ounces of fat,

16 2-3 ounces of sugars and starches.

For a man engaged in hard work the above requirement is increased to 4 5-6 ounces of body-building material, 5 1-3 ounces of fat and 15 ounces of sugars and starches.

A later investigator, Professor O. Atwater, has placed the daily requirement of body-building material for an ordinarily healthy man not at hard work at 4 1-6 ounces, and for a man at hard labor at 5 ounces. A still later investigator, Professor Chittenden, claims that mental and bodily vigor are maintained and increased by a diet that contains only two ounces of body-building material. This, of course, applies to the grown man of average weight not engaged in hard labor. For a larger man or one actively engaged, the

amount should be proportionately increased. For women, who are usually smaller in body than men, the amount should be somewhat less than that called for in the tables. Growing children necessarily require a larger quantity of all classes of food than those whose bodies have reached maturity while the aged will require less.

These standards simply demonstrate the minimum amounts a person may take without any evident harm. Like all standards, they are merely approximate and should be modified according to the experiences of the individual. Every organ of the body is capable, when in health, of doing considerably more work than is requisite for ordinary purposes. A slight excess, not too long continued, will do little if any injury to health. It is when the excess is considerable and long continued that diseased conditions result. Each individual must determine by experiment the minimum amount of body-building food that gives him or her best results in health and working ability. The standards of Voit, Atwater and Chittenden will prove valuable guides to this end, as will the following table, taken from Professor Chittenden's "Nutrition of Man," which shows the quantity of various foods that must be eaten to secure the two ounces of body-building food called for in his standard.

Two Ounces of Body-Building Material are Contained in

	Food Value	Calories
One-half pound fresh lean beef, loin.....	308	308
Nine hen's eggs	720	720
Four-fifths pound sweetbread	660	660
Three-fourths pound fresh liver	432	432
Seven-eighths pound lean smoked bacon	1810	1810
Three-fourths pound halibut steak	423	442
One-half pound salt codfish, boneless	245	245
Two and one-fifth pounds oysters, solid	508	508
One-half pound American pale cheese.....	1027	
Four pounds whole milk (two quarts)	1300	
Five-sixths pound uncooked oatmeal	1550	
One and one-fourth pounds shredded wheat.....	2125	
One pound uncooked macaroni	1665	
One and one-third pounds wheat bread.....	1520	
One and one-fourth pounds crackers.....	2381	
One and one-third pounds flaked rice.....	2807	
Three-fifths pound dried beans	963	
One and seven-eighths pounds baked beans.....	1125	
One-half pound dried peas	827	
One and eleven-twelfths pounds potato chips.....	5128	
Two-thirds pound almonds	2020	
Two-fifths pound pignolias, pine nuts	1138	
One and two-fifths pounds peanuts.....	3584	

Ten pounds bananas, edible portion	4600
Ten pounds grapes	4500
Eleven pounds lettuce	990
Fifteen pounds prunes	5550
Thirty-three pounds apples	9570

The given quantity of any of the foods in the above list provides the two ounces of body-building material called for by the lowest standard but some of them supply too much heat and energy making material while others provide too little. The minimum daily requirement of heat and energy making material, according to the American standard, is an amount of sugars, starches or fats that will yield from 2700 to 3000 calories. Those engaged in light to moderate muscular work require from 3000 to 3500 calories, while those at the hardest kind of labor require up to 6260. The calorie is the unit of heat measurement used in expressing the fuel value of foods, and is described as the amount of heat required to raise the temperature of one pint of water four degrees Fahrenheit.

The quantity of rice, crackers and shredded wheat given in the list comes nearest to supplying the minimum requirements for heat and energy along with the minimum requirements for body-building material, and so come nearest of all on the list to being complete foods. The flesh foods and many of the vegetable foods are not. A quantity of flesh food sufficient to supply the requirement for heat and energy would supply about nine times the amount of body-building material needed and many of the vegetable foods would provide an excessive amount of heat and energy making materials if taken in sufficiently large quantities to supply the two ounces of body-building elements. This shows the necessity of a mixed diet.

HEAT AND ENERGY VALUE OF VARIOUS FOODS

Number of Calories per Pound	
[From U. S. Government Reports]	
1. Olive oil	4.035
2. Creamery butter	3.605
3. Butternuts	3.370
4. Hickorynuts	3.340
5. Pecans	3.300
6. Pistachio nuts	3.250
7. Brazilnuts	3.120
8. Walnuts	3.075
9. Almonds	2.895
10. Peanut butter	2.825
11. Peanuts	2.560

12. Cheese	1.950
13. Granulated sugar	1.860
14. Dried peas	1.655
Corn meal	
15. Wheat	1.650
16. Dried lima beans	1.625
17. Dried lentils	1.620
18. Dried navy beans	1.605
19. St. John's bread	1.565
20. Wheat bread	1.215
21. Chestnuts	1.140
22. Goose eggs	.865
23. Dried beef	.840
24. Duck eggs	.800
25. Hen's eggs	.765
26. Guinea eggs	.755
27. Lean beef	.730
28. Turkey eggs	.720
29. Sweet cassava	.610
30. Fresh lima beans	.570
Sweet potato	
31. Yautia	.535
32. Taro	.475
33. Fresh peas	.465
34. White potato	.375
35. Human milk	.319
36. Cow's milk	.313
37. Parsnips	.300
38. Fresh fish, average.....	.295
39. Salsify	.250
40. Onions	.225
41. Carrots	.216
42. Beets	.215
43. Fresh string beans	.195
44. Rutabegas	.185
45. Skim milk	.170
46. Tomatoes	.165
47. White turnips	.160
48. Cabbage	.145
49. Watermelon	.140
50. Rhubarb	.105

Fish, fowl and beast, though composed of the same material as man, are not a complete food for him because he does not eat every part of the animal. Man requires calcium, chlorine, silica and other organic mineral salts for the growth and repair of his teeth, bones and hair and for the manufacture of digestive juices. He can secure none of these from flesh foods because they are locked up in the blood, bones, teeth, hair and digestive juices of the animal, which man does not eat. Thousands of toothless mouths and prematurely bald heads bear eloquent testimony to the fact that their owners' diet has for many years been over-balanced by flesh foods. Saddest of all is the fate of the growing child who is deprived of the fruits and vegetables

so rich in the material required for the building of teeth, hair and bones, and who receives instead an excess of flesh foods that supply little or none of these much needed elements.

A mixed diet is also made necessary by the fact that flesh foods contain very little indigestible fiber to supply bulk for the stimulation of the bowels. Cheese, milk, eggs and meats are constipating foods unless combined with three to five times their bulk of vegetable substance.

Soup

Clear soups are nourishing, and as a rule easily digested, but extremely constipating. Thick soups are apt to cause digestive disturbances because of the antagonistic elements of which they are so often composed.

Tapeworm

The presence of tapeworm in the human organism is directly traceable to the eating of raw or imperfectly cooked flesh foods. The egg of the tapeworm will hatch only in the stomach of one of the lower animals, and the developed worm can live only in the stomach and intestines of man. The rudimentary worm passes from the stomach of the animal in which it is hatched into the animal's flesh, liver or other internal organs, where it is enclosed in a sac or cyst. If the flesh containing one or more such cysts is not cooked sufficiently to kill the young worms they will attach themselves to the mucus membrane of the human stomach into which they are taken. When first taken into the human stomach the worm consists only of a head, which attaches itself to the walls of the stomach, from which it draws its nourishment. Here it remains, growing joint by joint and extending down into the intestines, sometimes reaching a length of forty feet. The joints farthest from the head are the most mature and contain the eggs of future worms. These joints break off from time to time and are cast from the body in the excreta. It is the presence of these segments of the worm in the stool that makes the diagnosis certain.

The varieties of tapeworm that most commonly occur in man are

1. The form which produces measles in the pig.

2. That which causes measles in the ox.

3. The tapeworm of the dog, which causes blind staggers in sheep.

In the case of tapeworm prevention is always more easy than a cure, as it is sometimes difficult to dislodge the head of the worm, and as long as the head remains new sections will continue to be formed. The only method of prevention is to eat no flesh that has not been cooked sufficiently to destroy any rudimentary worms that may be present.

Pumpkin seeds are an old-fashioned remedy for tapeworm. Two or three ounces of the bruised seeds are softened for ten or twelve hours and taken as a dose. Doctor Osler prescribes an infusion of pomegranate root, half an ounce; pumpkin seeds, one ounce; powdered ergot, a drachm; and boiling water, ten ounces. The infusion is to be taken in divided doses, in the morning, and while fasting.

CHAPTER ELEVEN

CONDIMENTS BEVERAGES

"Can that which hath no savor be eaten without salt?"
—Job.

The fully developed natural foods of man and beast are full of the savor that makes them agreeable to the palate and stimulates the flow of the digestive fluids. As long as man and beast could secure such foods they craved no "seasonings" other than those Mother Nature placed within them. It was not until they were compelled to live upon the imperfect and undeveloped fruits and vegetables outside of Eden's Garden that either craved or sought any artificial flavoring.

Wild honey, which he ate with bitter fruits, and a crude vinegar made of fermented fruit's juices, which he added to unsavory vegetables, were probably the condiments first used by man. Table salt and spices were adopted at a later day, when man deprived his food of its natural organic salts and flavors by cooking it. The use of flesh foods also increased the craving for table salt and all other condiments.

Honey remained the universal sweetener for a long time. Two kinds were known to ancient Israel, that gathered by the bee and a decoction made from the juice of the grape. The latter kind is spoken of in Genesis 43: 11. The ancient Japanese made an artificial honey called "ame" from glutinous rice and millet. Cane sugar was first known and used in India and China a few centuries before the beginning of the Christian era. It was known to the Greek physicians of that day as "Indian salt" and was used by them as a medicine. Cane sugar was not introduced into England and the rest of the world until the fourteenth century, and was chiefly used as a medicine until the beginning of the nineteenth century.

The diluted sugar found in fruits and vegetables is a natural fuel food, the artificially prepared and highly concentrated sugar in such general use today is a condiment. Sugar digests so rapidly that it supplies physical warmth and muscular energy much more quickly than starch or fat, and the highly concentrated manufactured sugar is almost as stimulating as alcohol. It is this property as well as its pleasing flavor that makes it so popular and leads many to take it in quantities injurious to health.

Digested sugars and starches enter the blood by way of the liver in the form of glucose or "blood sugar." When the quantity of glucose received exceeds the amount re-

quired to supply the existing fuel needs of the body the surplus is converted into glycogen or "liver sugar" and stored in the liver. Should the quantity of glucose entering the liver at any time fail to meet the heat and energy requirements of the organism, this stored glycogen is reconverted into glucose and used to make up the deficiency. The liver will thus take care of an occasional excess of either starch or sugar, unless it is already over-stocked with glycogen or is otherwise overworked or diseased.

When the liver is unable to take care of an excess of glucose the surplus must be passed on into the blood to be converted into fat and stored in some part of the body as a secondary reserve fuel supply. A continued over-indulgence in sugar or starch will thus lead to excessive stoutness and fatty degeneration of the heart and liver.

When all available parts of the body have been utilized as storage places for fat, and in cases where the organism is incapable of converting glucose into fat, a continued excess of glucose in the blood must be eliminated in the urine or burned in the blood. In the former case the kidneys are overworked and become congested and inflamed, in the latter case there will be excessive thirst, fever and headaches.

The carbon waste produced by this burning must be eliminated in the natural way through the pores and lungs or unnaturally through the mucus membranes of the nose, throat, bronchi, lungs, stomach, intestines, etc., in the form of mucus in colds, catarrhs, bronchitis, asthma and other diseases of the mucus membranes or through the pores of the "outer skin" in pimples, blackheads, boils, abscesses and eczema.

The digestion of sugar is so much more rapid than that of starch that when the two are eaten together the sugar will pass into the liver long before the starch is ready to enter. If enough sugar has been taken to supply the liver with all the glucose it can take care of, the digested starch will be rejected when it arrives and left in the intestine and the stomach to ferment and decompose. The alcohol and vinegar produced during this decomposition arrest the digestion of other foods, cause acidity of the stomach, heartburn, flatulence and inflammation, and the poisons evolved during the later stages of decomposition are taken into the blood from the small intestine and carried to every part of the body to cause headaches, languor, nervousness, insomnia, etc.

It is claimed that over fifty per cent. of all stomach troubles are caused by undigested cereal starch, and there is little doubt that a great deal of this undigested starch is taken into the stomach in the form of cereal mushes smothered in sugar.

Syrups, jams, jellies or preserves eaten with bread or cake tempt the appetite and lead to an over-consumption of fuel food. The sugar content of the syrup, jam or preserve, entering the liver long before the starch content of the bread or cake, may supply all the fuel needs of the body or be all the liver can take care of at that time, in which case the digested starch must be rejected.

It is estimated that the adult of average health engaged in ordinary labor can safely take from three to five ounces of sugar per day. This to include all sugar taken, whether in beverages, cake, desserts, candies or otherwise. Those very actively engaged in the open air and those exposed to low temperatures can safely use much larger quantities.

Knowing why and how an excess of sugar is injurious to health, the remedy and cure are obvious—a decreased consumption of sugar, to stop the evil at its source, and increased physical activity in the open air to burn up any surplus already taken and to drive the carbon “ash” from the body.

Vinegar

Judging by the sense of taste, sugar and vinegar seem as far removed as the poles, yet vinegar is simply sugar twice fermented—the first or vinous fermentation producing alcohol, the second or acetic fermentation producing vinegar.

Unfermented sugar is a life-giving food but fermented sugar is a food in process of decay. Alcohol and vinegar are excellent embalming fluids for fruits, vegetables and meats, because they kill the bacteria which would cause these substances to spoil, but alcohol and vinegar will also embalm or preserve food substances within the body, by neutralizing the digestive fluids that should dissolve them.

Those who take more fat, salt, sweet or starchy food than they should, and those who eat too little fresh fruit and vegetables rich in natural organic acids, often experience a strong craving for pickled foods or fresh foods drenched with vinegar or with sauces rich in vinegar. This is a natural hunger caused by a highly alkaline condition of the blood, which if not relieved will lead to impaired appetite, constipation, headache, loss of weight, dryness and roughness of the skin, swelling of the ankles, arm and leg sores, physical and mental weakness, and end in anemia, jaundice or scurvy. Vinegar satisfies this acid-hunger of the body but does so at the expense of good digestion and assimilation. Its use in large quantities has been known to lead to tuberculosis of the lungs, and its long continued use even in small quantities will inevitably cause paleness and wasting of the flesh. Its use is unnecessary, since all the acid needs of the organism may be more perfectly supplied by the natural and wholesome organic acids of fruits.

Spices

Man has long used certain pungent and aromatic roots, barks, seeds, flowers and berries as flavorings for his food. These were first used to impart savor to the imperfect and savorless foods upon which man was once compelled to subsist but today they are used to stimulate an appetite for unneeded food and to disguise or "doctor" substances that have become unfit for food and that could not otherwise be eaten. None of the spices have any food value, but all of them possess medicinal properties and are used in drug medication to doctor the stomachs that have been injured by spice-doctored foods.

Allspice, as the pigmenta or Jamaica pepper is commonly called, is the dried berry of a species of myrtle cultivated in the West Indies. The popular name was given it because it is thought to resemble in flavor a mixture of cinnamon, nutmeg and cloves. It is used in drug medication in flatulence and to prevent the griping of purgatives.

Cloves are the dried flower-buds of a species of myrtle. Their medicinal properties are as an antiseptic, stimulant and irritant, and they are used in medicine for the same purposes as allspice.

Genuine cinnamon is the bark from the under branches of a species of laurel grown chiefly in Ceylon. The inferior bark of the cassia, a native of China, is frequently substituted. Both are used in drug medication in combination with opium for flatulence, cramp of the stomach and pain in the bowels.

Cardamon are the capsules of various species of ginger plant. They are used as an ingredient in several brands of "bitters," and in drug medication are mixed with purgatives to prevent griping.

Cayenne pepper or capsicum is the product of an African plant. Its odor and taste are due to a volatile oil. It is an irritant of the skin and mucus membranes.

Ginger is the underground stem of an East Indian plant growing in moist places. It is used in drug medication for the same purposes as the before mentioned spices.

Mustard is the seed of the black mustard plant. In small quantities it is a stimulant and skin irritant and in large quantities an emetic.

Nutmegs are the kernels of a fruit shaped like a small pear that grows principally in the East Indies but which has been introduced into Sumatra, India, Brazil and the West Indies. It is a stimulant possessing narcotic properties. In large doses it is a powerful narcotic. The oil of nutmeg is used by physicians as a skin irritant in paralysis and rheumatism.

Mace is the fleshy covering of the nutmeg fruit. Its properties are the same as nutmeg.

Black pepper is made from the unripe fruit of a climbing plant native of the East Indies. It contains a fatty resin, an alkaloid and a volatile oil. It is stimulating to the stomach and irritating to the skin, and is used in drug medication to correct flatulence. White pepper is made from the best and soundest berries of the same plant, gathered when fully ripe and deprived of their external skin.

Vanilla is the fruit of a climbing plant that grows in tropical America. It is used in drug medication in hysteria and low fevers.

Spices must be classed with drugs and not with foods. Their stimulating effect is due to their irritation of the mucus membrane or "inner-skin" of the stomach, which draws an increased supply of blood and nervous energy to that organ and temporarily increases its warmth and activity. This increase is necessarily followed by a corresponding degree of exhaustion, for spices supply no food element to replace the heat and energy expenditure they have caused. Spice stimulation, therefore, is as artificial as the stimulation secured by alcohol. By temporarily inflaming the stomach, spices create a craving or false hunger for food that is not needed and that cannot be utilized by the body. Spices enable one to swallow foods that are "so far gone" on the way to decay that they could not be gotten past the sentinels of taste and smell unless thus disguised. But when foods are so diseased as to require "doctoring" it would be far better to bury them in the earth than to introduce them into the human stomach—unless it be the intention to use that organ as a catacomb for mummified foods.

Salt

No mineral element can be built into flesh or otherwise utilized by an animal organism until it has been organized in the body of some member of the vegetable kingdom. Any inorganic mineral substance taken into the animal body must be rejected and cast out as a poison. Chloride of sodium or table salt is the only inorganic mineral habitually taken into the body as a part of man's food, and it is treated the same as any other inorganic substance, cast from the body in exactly the same form as which it entered. Every substance that supplies the body with nutriment is changed during its progress through the body and leaves it in an altered form, but salt leaves as salt, in the tears, perspiration and urine, proof positive that it has not been in any way utilized as a nutrient.

Those who take Rochelle or Epsom salts regularly soon find they lose their effect as purgatives unless taken in progressively larger doses. This is due to the fact that the resisting power of the body is gradually overcome by

the continued presence of the poison, which is more and more tolerated as the resistance grows weaker. It is for this reason table salt no longer acts as a purgative unless taken in unusual quantities. Man has used it as a seasoner of his food for so many generations that his organism no longer violently opposes it. For this reason it is seldom suspected of being in any way injurious to health, but every violation of the laws of nature must result in injury to the violator, and those who use table salt must, and do, pay the penalty of their transgression.

Table salt is a germicide and disinfectant, which makes it an excellent preservative of meats and other foods and useful as a gargle for the throat. But it will also kill birds, and it is said that mice fed with it soon become blind with cataract. When taken into the human stomach it hinders the digestion of the food and interferes with the absorption of nutriment in the intestines. It also increases the solubility of albumen, causing a considerable quantity of this tissue-building material to be excreted in the urine, and it robs the blood of lymph and water and creates an unnatural thirst. Table salt is one of the causes of stomach, bowel and kidney troubles, emaciation, sexual impairment and old age, and by its irritating effect upon the mucus membranes of the body induces catarrh and rheumatism. The disease known as scurvy is caused by the excessive use of salt, and eczema is greatly aggravated by it. That it should work such havoc in the body of flesh is not so surprising when one remembers that it will corrode iron and steel and that ground sown with it becomes barren and unproductive.

Many Christian people believe the use of table salt is indorsed by the Scriptures because Jesus told His disciples they were the "salt of the earth." His words, however, were simply an application of the two-fold virtues of salt to His followers. Salt acts both as a destructive and as a preservative agent, destroying living bacteria that attack already dead organic substances, and thereby preventing the decay and dissolution of those substances. The Christian was to resemble salt in that he would act as a destructive agent toward the "bacteria" or germs of sin, and in so doing become the preservative agent of a race that while already dead in trespasses and sin had not as yet "decayed" or been totally destroyed. The Lord's words, while indorsing salt as a preservative of that which is without life, were no recommendation of salt as an article of diet. To the contrary, they carried with them the intimation that salt was destructive to that which possessed life, and this is the thought associated with salt in numerous Scriptures which speak of it as a plague and an agent of desolation. "When they see the plagues of that land, and the sickness which the Lord hath laid upon it. And that the whole

land thereof is brimstone and salt.”—Deut. 29: 22, 23. Again: “But the mirey places thereof and the marshes—shall not be healed—they shall be given to salt.”—Ezek. 27: 11. “Moab shall be as Sodom—a place of desolation—the breeding of nettles and salt pits, and a perpetual desolation.”—Zeph. 2: 9. “He shall not see when good cometh, but shall inhabit the parched places in the wilderness in a salt land and not inhabited.”—Jer. 17: 5, 6. “And he took the city, and slew the people, and beat down the city and sowed it with salt.”—Judges 9: 45.

Salt was a required addition to every sacrifice presented by the Jews to Jehovah. It indicated that the meat, bread or other offering was so imperfect and lacking in merit of its own as to be unsavory and unacceptable to God unless seasoned with this incorruptible earthy element. The salt would also destroy any germs of fermentation that might be present in the offering. As fermentation is used in the Scriptures to type sin, this would indicate that the offering had been purified and rendered free from sin.

The fact that certain domestic animals are fond of salt and that deer and other wild animals frequent “salt licks” in search of it is no proof that it is a part of the natural diet of either man or beast. The animals domesticated by man live almost as unnaturally as man himself. The horse and cow are fond of salt because they are forced to live the greater part of the year upon dried grains and grasses from which most of the natural organic salts have been extracted. Indigestion, constipation and impure blood are the natural results of this deprivation of needed organic cell-salts and there is an instinctive craving for anything with a salty flavor. Deer and other wild animals seek the “salt licks” because the imperfect foods upon which circumstances compel them to live do not supply the needed quantity of organic mineral salts.

Human bodies have been “pickled” with salt throughout so many generations that it is exceedingly difficult to rid ourselves of the habit of using it, even when we realize its injurious effects. Most of us eat so little vegetable food that has not been deprived of its natural organic salts in the cooking that our food would taste insipid without the addition of the inorganic chloride of sodium. Those who wish to prevent any further mummifying of their bodies by the use of table salt are recommended to try lemon juice as a substitute. In cold regions sugar is often used as a substitute, and in some parts of the world the inhabitants have no desire for either table salt or a substitute, because they live so largely upon fruits and vegetables in their natural condition as to supply all their needs with the healthful organic salts contained therein.

Beverages

Water forms the principal part of all beverages. Fresh water, taken alone or as combined by nature in the juices of succulent fruits, was the original beverage for both man and beast; a natural, healthful and life-sustaining drink because it contains none of the disease and death-producing elements of corruption and decay.

Stagnant water is in process of decomposition and we are warned of its unwholesomeness by its unpleasant odor and taste. Water holding in solution any decomposing animal or vegetable substance is still more offensive to our senses because it is so much more unwholesome. Water of this kind is so obnoxious that no one would use it for the purpose of quenching thirst unless compelled to do so, yet many in their ignorance of the laws of life, look upon such diseased waters as possessed of medicinal virtues and use them as remedies for disease.

Light wines and beers are the least injurious intoxicating beverages, because they contain the smallest proportion of the poison alcohol. They are sometimes temporarily beneficial when taken in moderation by those who cannot or will not live wisely enough to escape the evils of indigestion. An unadulterated light wine or beer is the lesser of two evils for such persons, for the alcohol in the drink stops the fermentation going on in the stomach and thus prevents the production of a much larger quantity of alcohol from the starch and sugar content of the undigested food itself. The organic mineral salts of the fruit from which the wine was made or the grain from which the beer was brewed are also beneficial, as is the water which makes up the major part of both drinks. But it is no longer necessary to take either a little wine or a little beer "for thy stomach's sake," for in the light of the present day we may so easily escape indigestion and stomach troubles by learning how to balance our ration and properly combine our foods, while in the unfermented wines now made possible by modern methods of sterilization we receive every healthful and life-giving property of the natural fruit.

Distilled or spirituous liquors are much more injurious than wine and beer because they contain a greater percentage of alcohol, and there is nothing to be said in their favor even as medicines. The warmth and exhilaration following their consumption is produced by the destruction of healthy body-cells.

The so-called "temperance" or "soft" drinks are more or less injurious to health because of their ingredients and the low temperature at which they are customarily taken. They contain no alcohol, it is true, but soda water and all

other "charged" drinks owe their effervescence to the presence of a twin-product of fermentation, carbonic acid gas. The fruit flavors taken with soda water are usually mixtures of chemically inharmonious fruit juices and cane sugar, and when this is not the case the fruit juice itself may be chemically inharmonious with foods in the stomach. So many cases of stomach trouble have been traced to the use of these popular summer beverages that it has become a common saying that they are more injurious than the intoxicants. The least injurious "temperance" drinks are lemon and orange phosphate, sarsaparilla, mead and root beer, all of which contain some slight medicinal properties.

Tea and coffee are mild "bracers" or brain, nerve and stomach stimulants. Their active principal, an alkaloid called "thein" in tea and "caffein" in coffee, spurs the nervous system to increased activity, while their agreeable aromatic flavor promotes the flow of the digestive fluids, and to that extent aids digestion. One or two cups of either beverage per day seldom do any noticeable harm. Yet some harm is surely done, because tea and coffee cause an increased expenditure of vital energy without supplying any of the elements by which it may be replaced. Loss of appetite, indigestion, nervousness, sleeplessness, palpitation of the heart, nose-bleed, etc., are induced by over-indulgence or long-continued slight indulgence in these stimulants.

In addition to the alkaloid "thein," tea also contains "tannin," an element that coagulates or tans albumen. Fish foods are so easily affected by the smallest quantities of this element that tea should never be taken at a meal when fish of any kind is eaten.

Cocoa is the only artificial beverage possessed of any food value. It contains considerable body-building material and is very rich in the elements that supply heat and energy, as shown in the following table:

Composition of Dry Cocoa

Heat and energy making material.....	69 per cent.
Body-building material	22 per cent.
Mineral matter (phosphates)	.04 per cent.
Water	.05 per cent.

Cocoa is a highly concentrated food substance, and unless used temperately will cause indigestion, constipation, skin eruptions, coughs, colds and catarrhs. It is a beverage well suited for those who do very hard work and those exposed to the cold but is apt to disagree with delicate stomachs and with persons engaged in sedentary occupations.

CHAPTER TWELVE

EASE AND DISEASE

"And thou shalt have great sickness by disease of the bowels."—II Chron, 21:15.

Ordinary "good health" is that degree of ease experienced when the various parts of the fleshly mechanism are working together so harmoniously that man is not conscious of their operation. Ill-health or sickness is the lack of ease, dis-ease, experienced when friction occurs between any parts of the organism or when any organ operates less perfectly than usual.

All things are governed by Divinely instituted and unchangeable laws. Life, health and happiness are the natural and sure results of righteousness (right-ness—thinking and acting in harmony with the laws that govern human existence); unhappiness, disease and death are the equally inevitable results of unrighteousness (un-rightness or the transgression of those laws). "For sin is the transgression of the law, and the wages of sin is death." No lack of ease is possible, therefore, until there has been a transgression of the law and an appreciable loss of vitality.

Health is a "positive" condition due to the natural and unrestricted operation of vital energy throughout the organism. Disease and death are unnatural and "negative" conditions brought about by obstructions that limit or prevent the natural operation of vitality. Such limitation occurs whenever any organ of the body is over-worked or under-nourished. These are the two primary causes of all disease and death, a super-normal expenditure or a sub-normal generation of vital energy. These were the primary physiological causes of father Adam's death and they have been the primary physiological causes of the diseased condition and death of his posterity. They were unavoidable in the past because of man's ignorance, weakness and unfavorable environment but are becoming more and more to be avoided as he increases in the knowledge that enables him to overcome his weakness and improve his surroundings.

The vitality may be lowered

1. By pre-natal influences:

- (a) A weakened "life-germ" imparted by the father.
- (b) The poisonous blood of the mother.

2. By lack of:

- (a) Sufficient oxygen.
- (b) Pure water.
- (c) Sufficient sunlight.
- (d) Relaxation.
- (e) Sleep.

3. By mechanical displacements:
 - (a) Wrong posture in standing, sitting, sleeping.
 - (b) Tight clothing.
 - (c) Weakness of muscles due to lack of exercise.
 - (d) Strains due to nature of employment.
 - (e) Strains, sprains and dislocations due to accidental injury.
4. By errors of diet:
 - (a) Mixing foods in the stomach that are chemically in-harmonious.
 - (b) A poorly balanced ration.
 - (c) Over-eating.
 - (d) Insufficient mastication and insalivation.
 - (e) The use of condiments, stimulating and alcoholic beverages.
 - (f) Under-eating.
5. By infection:
 - (a) Bacterial poisoning.
 - (b) Drug poisoning.
6. By intemperance:
 - (a) Sexual excess.
 - (b) Excessive mental or physical labor.
7. By baneful emotions:
 - (a) Fear, anxiety, worry.
 - (b) Pride, envy, jealousy, anger.
 - (c) Sorrow, grief.

These are the first steps toward disease, and the average person may take most of them for some time without conscious injury to health. A person in this condition becomes fatigued more easily than usual and feels a little dull and sluggish at times, but otherwise may appear to be in usual health. The slightest additional excess, exposure or error of diet, however, will usually prove a sufficient "exciting cause" of partial or total disability.

All abnormal internal physical conditions produce certain external and visible changes called "symptoms" that serve to point out the nature and location of the diseased condition. These begin with the first abnormal functioning of any organ, and when seen and recognized serve as timely warnings of threatened injury and distress. The most common preliminary "symptoms" are the following:

Signs of Disease

1. Headache, coated tongue, foul breath—Indigestion and constipation.
2. Vertigo—Derangement of the nerves and circulation of the blood.
3. Ringing in the ears—Nervous debility; the use of quinine.
4. Floating specks before the eyes—Dyspepsia.
5. Bitter taste in the mouth—Errors of diet.
6. Loosening of the teeth—Excessive use of table salt, baking powder, tomatoes or mercury.
7. Pale tongue or gums—Impoverished blood; loss of blood.
8. Blue line on gums—Metallic poisoning.
9. Bleeding gums—Excessive use of table salt.
10. Pain in abdomen—When lessened by pressure it indicates gas from fermenting foods; when increased by pressure it is usually caused by inflammation of the bowels.

11. Hot, dry skin—Fever; excessive use of table salt; mental excitement.

12. Cold sweats—Great physical or mental exhaustion.

The weakest or most abused organ of the body is always the first to suffer a complete breakdown, a condition soon brought to the attention of the individual by an unpleasant sensation called "pain." Physiologically, pain and pleasure are but slightly different degrees of the same property of nerves, sensation or "feeling," but one is a warning of injury, the other an assurance of safety. In man's present imperfect condition pain is his most trustworthy guide, as the temporary pleasure experienced in the act of transgressing the laws of life too often give him a false assurance of the safety of so doing.

Pre-natal Influences

It is now known that diseases themselves cannot be inherited. That which is transmitted by the parents to their offspring is a degree of vitality and a quality of fleshy tissue that makes the child more or less susceptible to certain disease-producing influences. In proportion as the "life-germ" imparted by the father is weak or strong, the living embryo will be weak or strong; and in proportion as the blood of the mother is contaminated, so will the new fleshy organism developed from the elements contained in that blood be contaminated.

A child may increase its store of vital energy and overcome its inherited tendencies toward disease by proper living in later life, and thus escape, as it often does, the particular diseases by which one or the other of its parents were afflicted. As a rule, however, the child remains sufficiently long in the same environment as its parents to form the same habits of life, which it often carries with it when it does leave home, and to which it necessarily adds many new habits formed by its contact with environments to whose influence its parents were not subjected. Thus do the influences of heredity and environment work together to make each member of the race differ from his brother, to form different habits and be more susceptible to certain forms of disease.

Sunlight—Relaxation—Sleep

The inspired writer of the book of Genesis informs us that the sun was made "to rule the day," the moon "to rule the night," and the domination of all things terrestrial by these heavenly bodies is a fact too patent to be denied. To the influence exerted by the sun is due that motion of the earth through the ether and those various degrees of heat

and light that give us our alternate days and nights and ever-changing seasons. To the influence of the sun and moon combined is due the movement and circulation of every wind and ocean current, the tides, the formation of dew, vapors, rain, hail and snow and that slow change in the axis of our planet which produces what is called "the precession of the equinoxes" and makes the pole-star of creation to differ from the pole-star of today, a revolution of the earth's axis that requires a period of 25,850 years to complete.

The continuence of all vegetable and animal life depends upon the physical conditions by which it is surrounded, and these conditions are almost altogether governed by the sun. By its heat, light, actinic, electric and magnetic influences it draws water from the seas, oceans and rivers for the distillation of dews and rains, it causes the germination of seeds, paints the flower of the field, and properly "cooks" every naturally ripened fruit and vegetable. The chemical influence of the sun upon plant life has long been recognized, but that it has an equally stimulating effect upon both the mind and body of man has not been generally known until recently.

No plant or animal could live in absolute darkness, and no plant or animal will thrive if it is for any length of time deprived of the direct light of the sun. Man's digestive organs become weak, his nerves lose their healthy tone and there is a diminishing of the red-corpuscles in his blood when he is deprived of sunlight. A continued deprivation induces chlorosis, "green sickness," and other anemic conditions which lead to emaciation, muscular debility, nervous excitability, irritability of the heart, dropsical effusions, softening of the bones, mental impairment and consumption. Lack of sunlight is a frequent cause of eye troubles, inducing eye-strain and squinting, which may produce blindness in the eye thus over-taxed.

Numerous experiments have proven that the color of one's surroundings has an influence upon health through the mind.

Black or the absence of color induces gloom.

Violet is mentally depressing.

Yellow induces to melancholy.

Deep, dull blue is mentally depressing.

Scarlet irritates the brain and induces anger.

The most healthful colors are those found in nature, the blue of the sky, the green of the fields and forests and that aggregation of all colors that makes the white of the snow and fleecy clouds. All kinds of red should be avoided in wall coverings and house furnishings except curtains. Green should predominate, all reds being reserved for personal raiment.

Necessary to health as sunlight is, however, its use

may be abused. It has the power to kill all forms of germ life, and it also has the power to kill the fleshly cells of the animal body and to severely injure the entire animal organism; a power frequently manifested in sunburn and sunstroke. Sunlight, like all other things, is beneficial only when used temperately. To escape injury, one should never long expose himself to the glaring rays of the sun in midsummer.

The tension of nerve and muscle produced by continuous application to one kind of mental or physical employment lowers the vitality by overworking the parts thus intemperately used. Change and variety are the rule in every department of nature, and when man does not make them the rule of his life he must suffer.

A warm sponge or friction bath given with a rough towel is an excellent remedy for fatigue, but the best of all cures for that "tired-all-over" feeling is twenty to thirty minutes' complete relaxation of mind and body in a darkened room. Having loosened the clothing, lie flat upon the back with arms loosely extended or lying loosely beside the body. Then simply "let go" and permit the body to become as limp as possible. The relaxation of the mind is best accomplished by thinking of one's self as idly drifting down a stream or floating through space upon a cloud. If sleep comes during this treatment, so much the better. It will have been needed and will work wonders of rejuvenation.

But resting does not always mean even temporary idleness. Relaxation of the entire body is necessary only for those who are completely exhausted, and even then is required but for a short space of time. All others are most benefited by a change of scene and occupation, by exercising in their hours of leisure those muscles of the body and faculties of the mind that are not exercised during the hours of gainful labor. Solomon tells us that there is "a time to weep, and a time to laugh; a time to mourn, and a time to dance," and those who have recognized this truth and made it a rule of their lives to mix considerable play with their work have always accomplished most and lived longest.

Indoor workers are most benefited by forms of play that take them into the open air, while those who work outdoors are best served by some form of indoor recreation. Gymnastics, unless taken in the form of play in competition with others, are not relaxations but labor and will not prove as beneficial as a game of bean-bag or lawn tennis. Muscles may be developed to almost any degree by swinging Indian clubs and lifting dumb-bells, but an abnormally developed muscle is as unnatural as a subnormally developed one. Muscles will always develop naturally according to the individual's needs for either work or play, and any muscle developed beyond the needs of the individual

is as much "excess baggage" and as useless as surplus fat. Gymnastics are more or less injurious unless continued throughout life. Professional athletes are seldom long-lived, and those who develop a large chest expansion by deep breathing are easy victims of consumption if they discontinue the exercise.

Certain "physical culture" movements are beneficial as "corrective exercises" for those whose muscles are not equally developed and for those whose muscles are sub-normally developed. Many such exercises are illustrated in the numerous health magazines now published but they are best prescribed by a competent physical culture teacher after a personal examination. In all such cases it is also advisable to consult an osteopathic or chiropractic physician, for any needed adjustments of displaced vertebrae or other parts of the bony framework.

Over-indulgence in either work or play is injurious, and turning night into day for either business or pleasure is a direct menace to health. The night was made for sleep, during which the circulation of the blood is equalized and the vitality restored. If the necessary sleep is not secured the batteries of life will be insufficiently recharged to meet the needs of the coming day and the consequent lack of vital energy will open the way to disease. Early to bed and early to rise is a very good rule of life, for the course of vitality follows the course of the sun. Man's consumption of oxygen, the breath of life, reaches its lowest point about half-past eight in the evening, where it remains until half after three next morning, when it increases until eleven in the morning, at which time it reaches its highest point. It remains high until one in the afternoon, then decreases. This shows the danger in late suppers and the wisdom of doing one's heaviest work or play in the morning hours. Another fact not generally known is that there are daily variations in the temperature of the body.

Body Temperature

Is lowest between 2 and 4 A. M.

Rises rapidly between 6 and 8 A. M.

Rises slowly 4 to 6 P. M.

Slowly drops from that time until the person retires, after which it drops rapidly until 2 A. M.

That a twenty-four hour rest period following every six days of labor is a physiological necessity as well as one of the commands of the Creator is proven by the fact that while the night's sleep recharges the batteries of life and equalizes the circulation well, it does not sufficiently restore the balance to insure perfect health and the attainment of long life. A seventh day devoted to rest restores the bal-

ance, as has been proven over and over again in the case of both man and the lower animals.

Digestion and Elimination

All forms of disease are necessarily intimately connected with faulty operation of the digestive and eliminative organs, for unless these organs operate normally the elements from which vital energy is generated will not be extracted from the food, and the body-wastes and poisonous fermenting food substances will not be removed from the body. Mechanical displacements of the bony structure or internal organs, whether caused by external injury, strains, wrong posture or flabbiness of muscles, may lower the vitality of an organ far removed from the digestive tract by a pressure upon nerves and blood vessels that partially shuts off the supply of vitality or nutriment to that organ, and fear, anger, worry, grief, etc., will exhaust the overwrought nerves, and the digestive and eliminative organs must suffer. The body has "many members," but the work of each is so dependent upon the work of all the others that if one suffers all must suffer in sympathy.

Reliable authorities estimate that from 85 to 90 per cent. of all human ills originate in the digestive tract, by incorrect habits of eating, drinking, etc., that prevent the proper digestion of food and cause a production of decomposing waste materials that clog the eliminative organs and poison the blood. The vitality thus becomes lowered at what may well be termed its physical source.

Four Exits—One Entrance

Taking food and drink into the body is a necessary and important act, man could not long exist without so doing, but that it is still more important to get physical wastes and unused food substances out of the body is proven by the fact that it is provided with four exits for waste material and only one entrance for food and drink. These four "exits" are the "sewers" of the body; the lungs, through which carbon in the form of carbonic-acid gas is removed; the pores, through which carbon and other poisonous wastes are poured; the kidneys, by which nitrogen wastes are expelled by way of the bladder, and the lower bowel or colon, through which the more solid excreta is passed. The inactivity of any one of these organs forces the greater part of its work upon the others, over-taxing their strength and decreasing their activity, in consequence of which an ever-increasing quantity of waste material is left in the blood to poison every other part of the body. When the body becomes saturated with these poisons they will be eliminated unnaturally through the "inner skin" in the form

of "colds," "catarrhs," etc., or through the "outer-skin" in the form of black-heads, boils, ulcers and skin eruptions, or the entire body will be temporarily disabled and the individual compelled to take to his bed for the rest and cleansing of the organism necessary to preserve its existence.

In the majority of cases the colon or large intestine is the eliminative organ first and most often rendered inactive, a condition commonly known as "costiveness" or constipation. That most civilized people are in a state of partial or complete constipation at nearly all times is proven by the universal and never-ending demand for cathartic salts, purgative oils, laxative drugs and the thousand and one nostrums continually advertised in the newspapers and magazines of the civilized world—the "drug store indulgences" by which the majority seek freedom from the penance imposed for dietetic sins. And the more of these "bowel-blasters" the "sinner" takes the more he is compelled to take, for each succeeding dose makes his bowels a little more inactive than before and thus increases instead of diminishes his constipation.

Common Effects of Constipation and Intestinal Poisoning

1. Foul breath; furred tongue.
2. Headache; dimness of vision; vertigo.
3. Sallow, muddy complexion; greasy, oily skin; fetid perspiration; pigmentation of the skin; black-heads, excessive perspiration.
4. Emaciation, kidney and liver troubles; tuberculosis.
5. Excessive stoutness with pallid skin.
6. Stiff neck; back-ache.
7. Cold, clammy, moist hands and feet.
8. Loss of hair; prematurely gray hair.
9. Capricious appetite; dyspepsia.
10. Bloating of stomach and bowels.
11. Sudden attacks of acute diarrhoea.
12. High, or low, blood pressure; palpitation of the heart; heart disease.
13. Pain or numbness at lower end of the spine.
14. Lack of ambition; drowsiness; stupidity; loss of memory.
15. Neurasthenia (loss of nerve force); neuralgia.
16. Apathy; anger; epilepsy; mania; madness.

These symptoms are never all present at the one time nor are they the same in each individual, as the poisons settle in and first affect the weakest part of the organism, which differs in each individual.

A daily bowel movement is no proof of freedom from constipation and self-poisoning. Upon the operating table and in the dissection room the large intestine has often been found distended by fecal matter to more than twice

its normal size, a small channel bored through the centre of the impacted filth affording just room enough for the "daily" bowel movement. Multitudes of people carry like "cess-pools" in the centre of their bodies for year after year. To those unable to discern the outer signs of the inner condition, such persons often present the commonly accepted appearance of good health—plenty of flesh and a good appetite; to the informed, however, the pallor of that flesh and the abnormal size of the abdomen mutely testify to chronic constipation and a colon literally "bulging" with long retained excrement.

Germes

Such internal conditions necessarily open the way to the most serious bacterial infection and the existence of the so-called infectious or "germ diseases," which under certain climatic conditions become so prevalent as to be called epidemic. Ever since the microscope enabled man to see those minute forms of life known as "bacteria," "microbes," "bacilli" and "germs," the orthodox scientist and medicine-man has come more and more to believe that all disease is due to their presence in the body. This new theory has followed close upon the rejection of the former theory that disease was "a humor of the blood" to be driven out with pills, powders and various nauseous liquid decoctions, which theory had followed a still older one to the effect that all disease was caused by the presence of "disease devils," who were to be driven from the afflicted body only by incantations to Jupiter, Apollo or Aesculpius or by the ringing of bells, beating of drums, etc. The "science" of medicine is progressive and as theories change the form of treatment necessarily changes also. The modern medico no longer prescribes the making of a sacrifice to Aesculpius nor the beating of a drum for several hours nor even the administration of "powdered sheep's excrement and old man's urine," as he did in the eighteenth century, nor calomel and bleeding as he did in more recent years; today he seeks to prevent as well as cure the disease by inoculating his patients with serums that in the laboratory have been found to kill or partially disable the particular variety of germ for which they have been compounded.

That this theory, too, shall pass away as knowledge of the laws of life increases is proven by the fact that it is already passing, a French scientist having announced recently that bacilli (the so-called disease germs) have a protean faculty of changing from one sort into another, a fact long suspected by many other and very careful investigators and which proves the truth of their contention that the so-called harmful microbes are simply beneficial bacteria

that have been changed in appearance by the nature of their environment. This thought and finding is also supported by the Scriptures, for disease-germs were never any part of the creative work of the God who looked down upon all that He had made and pronounced it "very good." Since the Bible most plainly informs us that all created things were brought into existence by one Being and that all were very good, we have the assurance of Jehovah Himself that "disease" germs were never created and, therefore, do not exist. The same Authority informs us that disease is caused, not by "germs" but by man's transgression of the laws provided for the regulation and preservation of his existence.

Bacteria were created long before man and have their own place and work in nature. They are so much upon the border-line between the animal and the vegetable kingdoms that scientists have not known whether they should be classed as animal or vegetable. They are generally classified as vegetables, however, despite the fact that many of them have the power to move about at will and to perpetuate their species by a device resembling the laying of eggs.

Bacteria is the generic term for these micro-organisms, which are everywhere present and from which every form of life originates. They consist of protoplasm and have the shape of spheroids, short cylinders, or rods and threads. The largest of them are not over 1-12,500th of an inch in diameter and they multiply with astonishing rapidity, a single bacterian cell producing sixteen million new cells within nine or ten hours. A newly born bacterian cell will reach the limit of its growth and begin to propagate within the space of twenty minutes. The word "germ" is derived from *germen*, meaning to "sprout," from which we also get the words "germinate" and "germination." Bacterial "germs" are the sprouts, spores, eggs or seed-cells by which the reproduction of bacteria is effected.

Bacteria are roughly divided into two general classes, those recognized as necessary to the continuance of vegetable and animal life and those thought to be producers of disease. Among the first class are the bacteria that supply the roots of trees and plants with nitrogen, the yeast bacteria, mould bacteria, and the bacteria of decay by which the tissues of dead plants and animals are decomposed and their elements returned to the earth and air from which they came. Were it not for these the carbon and nitrogen contained in dead animal and vegetable substances would remain forever locked up and useless. Set free by the bacteria, these elements are available for use over and over again.

The "pathogenic" or supposed disease-producing bacteria are known as "bacilli" to distinguish them from their

more noble and supposedly more useful brethren. Like all other varieties, the "bacilli" are almost everywhere present and if they were capable of the disease-producing power ascribed to them the human race must long ago have become extinct. Most of them may be found in the normally healthy body at all times. Vast numbers of them are found in the saliva, blood, serum, pus and bowel excreta of the diseased person for the same reason that vast numbers of flies are found in the carelessly kept house or stable yard, because of the presence of filth. When the intestines, stomach, kidneys, lungs or any other organ become congested with waste matter, these little agents of decomposition will naturally be present in large numbers to resolve that dead matter into its original elements. Bacteria, therefore, are the product of the internal uncleanness which causes the diseased condition of the organism instead of the cause of that condition. Bacteria cannot thrive in the body that is clean internally but the organism loaded with unexpelled wastes is a fertile field for them.

When the putrifiactive bacteria perform their work in the garbage pail or upon the surface of the earth, the foul-smelling gases evolved during the process serve as warnings to keep away all living flesh, to which the "bacterial excreta," the products of decomposition—phenol (carbolic acid), indol, skatol, etc.—would be injurious. The same warning gases are evolved when the bacteria work within the living animal body, but the cleaner organs cannot escape from the unclean ones and must suffer. The poisons produced by bacteria at work in the intestines are carried to other organs of the body in the blood. In this indirect way bacteria have to do with the cause of the diseased condition. But they would not have been present had not the already diseased condition of the intestine or other befouled organ made their presence and activity necessary. Killing the germ to prevent or cure the disease caused by the filth that produces the germ is on a par with attempting to rid a community of mosquitoes without draining the swamp in which they breed, and it is fully as wise to believe that the mosquito is the cause of the swamp as it is to believe that the "germ" is the cause of the disease.

Serum Therapy

All bacteria are quickly killed by the direct rays of the sun and by very high or extremely low temperatures and by carbolic acid. The digestive juices kill most bacteria, and those that do find their way into the bloodstream of the body that is not overloaded with filth are taken care of by the white blood-corpuscles. Internal and external cleanliness are the best of all germicides and the

only preventives and cure for disease. External filth saturated with vile smelling chemicals may no longer be detected by the sense of smell, but it is there nevertheless, and disease germs killed by serums injected into the blood may no longer make their presence felt by reason of the debris-destroying work they were engaged in but they are still there, only their dead bodies are now added to the previously present filth, as well as the poisons by which they were destroyed, and it will not be long until some other form of disease is manifest or the organism becomes so clogged as to cease to operate. Bernard Shaw, in an article in the "Osteopath" reprinted from the "English Review," reminds us that the British troops inoculated for typhoid immediately contract a new disease called "para-typhoid" because it is "just like typhoid." And when the troops are inoculated with a new serum for this new disease they immediately contract another called "para-typhoid B," for which still another new serum is provided. To quote Mr. Shaw's own words: "They suffer as before; but the indefatigable bacteriologist rises to the occasion, and the discovery of the 'para-typhoid C' and the preparation of vaccine T A B C leads to the reinoculation of the army survivors."

Vaccination and serum therapy have often prevented any further manifestation of disease in the organ first affected but they have never prevented or cured disease. To the contrary, they have in many cases been the direct cause of the death of the person thus treated, for those who are not possessed of sufficient vitality to overcome the poisonous effects of the vaccine or serum in addition to the disease producing poisons already in the body must succumb. Those in good mental and physical condition, however, have little to fear if compelled to submit to inoculation. Its poisonous influence may be as successfully overcome by proper living as is the effect of any other poison introduced into the blood by accidental injury.

Piles, Abscess and Fistula

Hemorrhoids or piles, abscess and fistula are other results of long continued constipation and inflammation of the rectum and anus. Itching of the anus is a common symptom of an inflamed condition of these parts, caused by an exudation through the skin from the affected surface. Piles are a later manifestation of the same condition but may be produced also by straining at stool, which inhibits the circulation of the blood and causes local congestion and distension of the veins. Abscess and fistula are the final results of long continued inflammation of the parts, with the formation of pus. Fistula occurs when the confined pus seeks an external outlet by way of little channels bored through the muscles and connective tissues.

Itching of the anus and piles are relieved by the sitz bath and the use of the enema or internal bath but are to be cured only by proper regulation of the diet and general mode of living. Certain "bowel-specialists" and some vendors of nostrums claim to cure fistula without an operation, but the "regular" physician of every school claims that it is curable only by the surgeon's knife. It is reasonable to suppose, however, that if the cause of the inflammation is removed the formation of pus will cease and the natural healing forces of the body eventually close the no longer needed abnormal openings. This will naturally be a work requiring considerable time, since the condition has usually been a long while developing, but for those willing and able to pay the price demanded by nature for a cure it will be a much more satisfactory method than those which give hope and temporary relief by preventing the result but do not remove the cause.

Sexual Excesses

The function of the sexual organs is the Creator's wise provision for the propagation and multiplication of the human race, and the periodic development of the male and female portions of the "seed" is as natural and as inevitable in normal male and female human organisms as it is in the normal male and female organisms of the lower animals and plants. In normally healthy human beings the procreative substances reach the limit of their development every four weeks, causing consequent natural or instinctive sexual desire. In the female this is followed by a conscious loss of substance in the menstrual flow; in the male, if sexual intercourse is not experienced, by an unconscious loss of substance in the perspiration and urine. This analogous loss of substance by the male was first discovered by Santorinus, whose findings have recently been confirmed by modern scientists.

This periodically aroused sexual desire is a natural human instinct and the many good people who have so earnestly prayed for its removal have been unconsciously asking their God to reverse the operation of one of His perfect and unchangeable laws. Needless to say, their prayers have remained unanswered. In this case work, absorbing mental or physical labor, is much more efficacious than any number of prayers.

As with every other natural human appetite, the sex instinct has been perverted by wrong thinking and wrong living and as with the Sodomites it is apt to be most perverted in the case of those who possess a "fulness of bread and abundance of idleness."

That constipation as well as wrong thinking, idleness and an over-stimulating diet has much to do with secret vices, the "social evil" and marital excesses, cannot be denied. An engorged intestine pressing upon the internal sexual organs necessarily exerts a pressure that creates an unnatural desire for the removal of their contents. In this indirect way constipation undoubtedly acts as one of the preliminary causes of consumption, epilepsy, nervous exhaustion, paralysis, idiocy, insanity and sterility in both sexes; of all forms of venereal disease and locomotor ataxia; of menstrual troubles, miscarriages and the countless thousands of surgical operations that are performed on women, as well as the blinding of infants and the birth of mentally and physically defective children.

Constipation and Pre-natal Influences

Manifest constipation is a common and troublesome disorder in infancy. The disease producing poisons manufactured in the unclean intestines of the partially or altogether constipated mother are necessarily absorbed by the embryo before birth and imbibed with the mother's milk by the infant after birth. Since practically all persons are either consciously or unconsciously constipated, and since the babe's intestines can be of little better quality than those of its mother, constipation very naturally becomes manifest in the nursing child with every dietary indiscretion of the mother. The castor oil and other "laxative medicines" so usually given at such times only serve to increase the torpidity of the little bowels and make them still weaker than they were before. The regulation of the mother's diet is the best prevention of this trouble; the internal bath, adapted to the age of the child, the most healthful method of quick relief. A common baby syringe should be used for infants, and one-half cup of warm water injected in the rectum, after which the babe should be held in the positions that enable the water to flow to all parts of the larger bowel. Children from two to seven years of age may use the internal bath in the same manner as adults, but using only one pint of water; children from seven to fourteen should use one quart; above that age the full two quarts may be used.

Soothing syrups, all of which contain opium or other elements that "soothe" by numbing the nerves, induce and intensify constipation by depriving the bowels of nervous energy. Delayed removal of the diaper is another contributing cause of infantile costiveness and an exciting cause of inflammation of the colon, rectum and anus that may last throughout life.

Errors of Diet

Lack of fresh air, pure water, sunlight, exercise, rest and sleep all play their part in lowering the vitality and making disease possible in both childhood and adult life but errors of diet figure most prominently. Custom and habit lead most persons to take food three or more times in the twenty-four hours irrespective of their need of nourishment, and when at table they choose from the food set before them according to their "feelings" rather than by any knowledge of the properties of the food or its effect upon their bodies. Everything that "tastes good" is accepted, more or less hastily masticated and insalivated, and swallowed without a thought as to the propriety of mixing so many kinds of food in the stomach. This indiscriminate selection of food is probably man's greatest dietetic sin and the cause of the major part of his dietetic troubles. Foods that are antagonistic virtually "explode" after they are in the stomach a short time, fermenting and causing all manner of digestive disturbances and providing an excessive amount of waste material for elimination by way of the large intestine.

The normally healthy person may safely eat any article of food he craves, provided he does not mix it with foods that are inharmonious and refrains from dosing it with embalming fluids that prevent its digestion. In the chapters on foods we have already indicated the degree of chemical harmony between various foods. An easily remembered general rule is that acids and starches and acids and sweets do not harmonize and should never be taken at the same meal or close enough to one another to permit of their mixing in the stomach.

Mixing foods of like nature in the stomach is also conducive of indigestion, lowered vitality and constipation. Meat and milk, meat and eggs, eggs and milk, meat and beans or bread and potatoes, bread and rice, bread and pastry are bad combinations. The best "balanced" meal is one that consists of one body-building food, one heat and energy making food and one green vegetable. This example is set before us in the Bible. When the Creator of man and man's food prescribed the diet it always consisted of a single body-building food and a single heat and energy making food, to which on some occasions were added green herbs. Lamb's flesh, unleavened bread and bitter herbs were commanded at the feast of the Passover (Exodus 12:8); during their forty years in the wilderness Israel was fed with manna and quail; and when Jehovah fed His prophet Elijah at the brook, He sent him "bread and flesh in the morning and bread and flesh in the evening" (I Kings 17:6). And when Jesus fed the multitude he gave them

bread and fish, which He also gave to His disciples when, after His resurrection, He prepared a meal for them.

A great many err by over-eating, and by eating shortly before or after a meal. The latter is particularly apt to be the habit of those who have failed to digest the meal previously taken and whose stomachs contain considerable gas. Taking additional food temporarily relieves the condition (mistaken for hunger) by reason of the increased flow of blood and vital energy to the stomach but it serves only to increase the trouble later on. It takes time to digest a meal—from five to seven hours in the ordinary “normal” stomach and considerably longer in the diseased one—and no benefit can possibly be derived from any article of food until it has been digested and assimilated. The increased vigor usually experienced immediately after a meal cannot come from the food just taken. It is drawn from the reserve stores of vital energy to “speed up” the digestive organs.

Most adults eat more body-building food than they should for health, particularly meat, eggs, milk and cheese. Those who have attained their full growth and physical development require no more body-building material than that needed to replace the tissues broken down and worn out by their daily activities, and the adult who uses his muscles little will naturally require still less than those engaged at hard labor. A diet overbalanced on this side is a common provocative of constipation, as it provides too little coarse fibre for healthy bowel action.

Many go to the other extreme and practice intemperance in the use of sugars, starches and fats. Considerably more of this class of food is needed than of the body-building foods, but when taken in excess of the demand created by the individual's activity and the temperature of his environment they cannot be utilized and must be stored in the body as fat or forced from the inner or outer skin in the shape of mucous or pus.

Those whose diet is almost altogether lacking in fruits and green vegetables are under-eating and slowly starving themselves, however great the amount of food taken, for the diet must be balanced by fruits and vegetables rich in the organic salts required for the manufacture of the digestive juices or the digestion will suffer and the body be under-nourished and exposed to disease.

All flesh foods are more or less constipating because of their concentrated nature, as are some cereals and one or two fruits under certain conditions. The constipating influence of such foods may be neutralized and overcome by combining or alternating them with foods having the opposite tendency. As an aid to the identification and selection of the most effective foods in each class, we present the following tables:

Constipating Foods

1. Dried beef.
2. Smoked ham.
3. Yolk of egg.
4. Condensed milk.
5. Cream cheese.
6. Cottage cheese.
7. Cream.
8. Whole or skimmed milk.
9. Cornstarch.
10. Soda crackers.
11. Fresh white bread.
12. Candy.
13. Boiled rice; farina; sago.
14. Pastry of any kind.
15. Mashed potatoes.
16. Nuts of any kind.
17. Buckwheat cakes; pancake
18. All fried foods.
19. Rich gravies.
20. Salt meats or salt fish.
21. Hard-boiled eggs.
22. Dried beans.
23. Liver.
24. Uncooked huckleberries or strawberries.
25. Blackberry juice.
26. Bananas.
27. Clear soups.

Laxative Foods

1. Figs.
2. Blackberries.
3. Rhubarb.
4. Prunes.
5. Plums.
6. Peaches.
7. Oranges.
8. Apples.
9. Raw cabbage, carrots, spinach, celery, lettuce.
10. Whole wheat bread.
11. Bran bread.
12. Veal.
13. Oatmeal.
14. Raisins, grapes.
15. Olive oil.
16. Onions.

Neutral Foods

1. Roast or boiled meats.
2. Raw, poached or boiled eggs.
3. Baked or boiled fish.
4. Baked potatoes.
5. Toast or stale bread.
6. Cooked vegetables.
7. Cooked fruits.

An attack of acute constipation is the signal to abstain from all constipating foods until the condition is relieved.

Laxative foods may be taken unless there is inflammation of the stomach or diarrhoea, in which case it is wisest to stop all food except orange juice and water for a period of twenty-four to thirty-six hours, or until normal conditions have been restored. The first heavier food taken after recovery should be a cup of clam broth, every three or four hours during the day, followed by barley broth or a poached egg on the day following, after which meal there may be a return to normal diet. Absolute rest in bed, with complete mental relaxation, is an essential part of the above treatment.

Too rapid eating is a frequent cause of indigestion and constipation, the stomach being filled so rapidly that there is insufficient gastric juice prepared to digest the food. Too rapid eating also leads to insufficient mastication of food, which increases the labors of the stomach, and to insufficient insalivation, which prevents the digestion of starchy foods. All foods should be sufficiently masticated to extract all the taste before swallowing. Otherwise we deprive ourselves of much of the principal joy of eating, as well as lay the foundation for future painful experiences, for the stomach has neither teeth nor the sense of taste. It is now known that taste has much to do with the proper digestion of food, the amount of digestive fluid prepared by the stomach depending upon the quantity of food flavor extracted from the food in the mouth, the stomach being dependent upon the information sent it by the taste-buds in the mouth; and those taste-buds can send no information concerning any particles of food with which they do not come in contact. All such particles must enter the stomach as material for which no provision has been made and which, therefore, must sour, ferment and decay. Using the stomach as a place into which to "pour" our soups and beverages and into which to "dump" our more solid foods will sooner or later cause it to smell like both a sewer and a dump and become as great a menace to health.

Those who practice thorough mastication and insalivation add to their pleasures in life and improve their health. They find it takes much less food than formerly to satisfy their appetite and produce the increased health and vigor they experience. Best of all, they soon develop a natural, healthy taste-instinct that enables them to select the proper kinds of food in the required amount for each day's needs; and with the restoration of the natural taste-instinct they lose all desire for unhealthful food substances, disease inducing condiments and stimulating beverages. In the latter connection we quote from the writings of Horace Fletcher, the apostle of complete mastication, as follows: "When the body will tolerate spirits tasted into it—not poured into it—which is not often when the nutrition is normal, the spirit

will mix quickly with the saliva and become neutralized sufficiently to excite the swallowing impulse. Continue sipping the spirit for a time and you will note that there comes a point where the saliva and the spirit do not mix, do not neutralize; the mouth becomes unduly full of liquid without any relaxation or invitation of the swallowing impulse, and the really instinctive inclination will be to spit it out. . . . Whiskey taken in this analytical way is a sure means of breaking up any desire for it. . . . Many of our test subjects have been steady and some heavy drinkers, but persistent attention to Buccal thoroughness (complete mastication) has cured all of them of any desire for alcohol, and in time leads to complete intolerance of it."

Among other things, Mr. Fletcher's experiments have most conclusively proven that the number of bowel movements per day are no true indication of the state of health. Many health writers assert that those who eat three times daily cannot be in health unless they also have three movements of the bowels per diem. When Mr. Fletcher and his followers rejected all tasteless meat and vegetable fibre and swallowed only the perfectly masticated nutritious part of their foods they had but one bowel movement in thirty days and they testify to having enjoyed better health than ever before. Their experience simply proves that the number of bowel movements necessary to health depends altogether upon the quantity of "physical ash" and "food clinker" to be removed from the body, which necessarily depends upon the extent of the activities of the individual and the amount of innutritious substance taken with his food. Too much roughage in the diet may cause constipation and disease by obstructing the bowel or irritating it, too little will produce the same result by providing too little stimuli for normal action. We cannot, therefore, recommend the practice of rejecting all the tasteless residue left in the mouth after the complete mastication of the food. It would doubtless prove advisable for a time in cases where the lower bowel was considerably diseased. Fatigued and diseased organs improve by rest but too long a rest will weaken any organ of the body. Every part of the physical mechanism was made for use, and if any part is permitted to remain idle over long it will become lazy and refuse to work. Mr. Fletcher and his followers were undoubtedly possessed of lower intestines very much in need of rest. Therefore they had been greatly benefited—up to the time of the giving of their testimony.

Two bowel movements during the twenty-four hours are usually more beneficial to the health of the very active, robust person than one, but they should never be secured by force. Neither should any one become unduly alarmed and resort to straining at stool or the use of "physic" should an entire day pass without any movement. By skipping a

meal that day, eating a little coarser food, green vegetables or fruit, drinking a little more water and light exercise in the open air, a normal bowel movement will usually be secured on the day following. It is best to avoid the use of the internal bath when possible, as its too frequent use tends to weaken the walls of the intestine. It is an emergency method that should seldom be used unless the head aches or the tongue is thickly coated.

Types of Mankind and Disease

Acute or manifest constipation is found more often in dark than in fair persons. This is generally due to the fact that dark complected persons are more often of the nervous type, who use so much of their vitality in mental or physical effort as to have too little left for the proper operation of the digestive and eliminative organs. Such persons eat rapidly, as a rule, and pay little attention to diet. They are often "too busy" to heed the call of nature, and when they do are often too impatient to wait for a complete evacuation.

The world of mankind is roughly divisible into five general types, each of which is particularly susceptible to certain forms of disease.

The Five Types of Mankind

1. The Lymphatic or Phlegmatic (heavy, dull type). Persons of this type are disinclined to exercise. Their muscles are soft and flabby and there is a general absence of tone in the system. They are most subject to asthma, rheumatism and heart disease.

2. The Nervous Type—Either small in stature or spare in flesh; light eaters and sleepers; active in mind and body. Tendency to acute constipation, throat and lung diseases and diseases of the nervous system.

3. The Sanguine Type—Florid complexions; jolly dispositions. Have hearty appetites, and are most subject to gout, hardening of the arteries, heart and kidney troubles and apoplexy.

4. The Bilious Type—Large eaters but derive little enjoyment from eating. Subject to intestinal indigestion, constipation, gallstones and diseases of the liver.

5. The Strumous Type—Appetite small and digestion poor. Cannot stand confinement well. Have little recuperative powers and wounds heal slowly. Particularly subject to consumption when closely confined.

The Emotions

That complex system of nerves which links up every organ and part of the body and over which travels the energy by which every part is animated and the impulses

by which every part is governed, is connected with the brain with which we do our conscious thinking. Every wave of mental energy generated by the act of thinking must necessarily travel over these fleshy telegraph lines, to stimulate or paralyze the nerve centers throughout the body, benefiting or injuring the organs they control. Every thought tends to arouse some emotion and every emotion exerts an influence for good or evil upon the fleshy mechanism of the person in whose mind the thought has been conceived or the emotion aroused. It is a physical as well as a spiritual truth that "as a man thinketh in his heart so is he," and that out of the "heart" the emotions, are "the issues of life."

All are more or less familiar with the external physical changes produced by the emotions, visible in the expression of the face, which is illumined by joy, blanched by fear and flushed by anger; and all know that grief or sorrow destroy the appetite. But all are not aware that equally sudden changes have been produced internally, that the heart, lungs, digestive, secretive and excretory organs are directly influenced by every emotion. Whatever uplifts the mind will "quicken" or vitalize the body and whatever debases the mind will devitalize and injure the health of the body. To be righteously minded (right-minded) brings life, health and happiness, to be unrighteously minded (wrong-minded) brings unhappiness, disease and death.

The baneful emotions are a frequent and common cause of lowered vitality, and when long or often indulged in may so derange the functions of the organism as to become the "exciting" as well as the primary cause of disease. Sudden and intense emotions have often caused instant death. Many have died from sudden fright, and in some rare instances the heart has been actually torn asunder by the reflex action of intense emotion. Prolonged terror has turned the hair white in a single night and a fit of anger has so changed the quality of a mother's milk as to poison the babe at her breast.

Fear is the father and ignorance the mother of every baneful emotion, the underlying cause of all unrighteousness. Fear of hunger, cold and nakedness inspires man's mad struggle for existence and warps the natural instinct of self-preservation into the most cruel selfishness. Fear of loss and the fear of being unable to attain leads to suspicion, worry, envy, jealousy, and prompts anger and hatred, which inspires words and deeds that bring an aftermath of regret, sorrow and grief. Fear necessarily played its part in the execution of the death sentence imposed upon our first parents. Driven from Eden's Garden into the uncultivated portion of the earth, they were exposed to conditions that gave them every reason to fear. They knew they were to die but knew not when or how, and must long have lived in constant expectation of death. And fear has always played

a leading part in the life of each of Adam's children. The child deceives it's parents because it fears a promised punishment, the husband deceives the wife because he fears her reproaches and tears and the wife deceives her husband because she fears his anger. Man deceives his fellow man because he fears the loss of prestige or opportunity to gain some desired benefit, woman deceives woman because she fears some injury to her reputation, and nation goes to war with nation because each fears the other may gain the ascendancy. All are more or less dominated by fear unless they learn to love so perfectly that fear can find no place in their mentality. "For perfect love casteth out fear."

The influence of fear in producing disease is most plainly manifest during epidemics. At such times those who fear the disease are usually stricken with it. Fear will likewise cause indigestion, stomach trouble and constipation by its paralyzing effect upon the solar plexus, the nerve center or "little brain" that controls the mechanism of the stomach and intestines. It is not well, therefore, for man to take too anxious thought as to his physical condition or as to what he shall eat and drink or the manner in which he shall be clothed. It is not safe for us to take ourselves too seriously or to be always looking for signs of disease. He that seeketh findeth, and those who are constantly weighing themselves, looking at their tongues, taking their temperature or eating their food by weight, are sure sooner or later to suffer from so doing. Neither is it wise to read advertisements that extol the virtues of patent medicines, especially those in which are set forth the symptoms of the disease the remedy is supposed to cure. The suggestive influence of such advertising tends to the development of the same symptoms if the reader be at all susceptible.

Anxious thought is a mild form of fear that produces like results in somewhat lesser degree. For this reason, those who take up the practice of thoroughly masticating their food should make no attempt to chew it any certain number of times or make any conscious effort to retain it in the mouth after the instinctive desire for swallowing has been manifested. Mr. Fletcher himself declares: "Once the swallowing impulse has asserted itself, there is no advantage in and there may be direct injury from attempting to hold the food in the mouth, even if it has not been reduced to the point of complete liquefaction and tastelessness."

Since every sense works together to stimulate or inhibit the functions of the digestive organs, it is important that every sense be healthfully gratified during meal times. Good digestion is much more assured when the surroundings are bright and cheery, the food properly prepared and daintily served and the conversation at table cheerful.

We are all more or less influenced by suggestion every

day of our lives; the thoughts suggested by the words we hear or read, music we listen to, by certain odors, etc. The mere thought of green persimmons or the juice of a lemon will cause most mouths to "pucker," and the recollection of the taste of some particularly nauseous dose of medicine taken in some past time will produce the involuntary shudder that accompanied it's actual taking. This power of suggestion has been turned to good account by some when they have difficulty in securing a bowel movement. By simply recalling the taste and effect of certain purgative medicines they have at some time taken, they often succeed in opening the bowels without taking the medicine.

The mind, like the body, is developed and nourished by the food it receives, digests and assimilates. This food comes from the individual's environment and consists of all that he attentively sees, hears, tastes, touches and smells. The character and disposition of the individual necessarily depends upon the kind of mental nutriment he accepts from his surroundings, the kind of mental impressions to which he conforms his mind by his attentiveness and his ability to digest or properly understand what he hears, sees, etc. This disposition will be evidenced in the spirit or mental influence he manifests in word and deed and in that mental "atmosphere" called "personality" by which each one of us is surrounded, and by which we consciously or unconsciously influence the thoughts and actions of others. The pessimistic, gloomy, grouchy person is surrounded by an unhealthy personal atmosphere that exerts a depressing or irritating influence upon all with whom he comes in contact, and for that reason he is usually instinctively avoided, while the hopeful, bright, cheerful, optimistic individual is a general favorite because of the bracing effect of his personality. A personal atmosphere created by unwholesome thoughts is as poisonous as atmospheric air charged with carbonic acid gas. For the sake of those with whom we come in contact, as well as for the good of our own mental and physical health, we should strive to keep always in mind only thoughts that are edifying, uplifting, stimulating and healthful. This we may do by seeking for and mentally looking upon the good to be found in all things and all people and by refusing to meditate upon the unpleasant and evil which is in everyone and all things so much more plainly manifest.

The angry person is to be avoided. He fills his immediate surroundings with the most virulent mental poisons in the form of words that cut and sting and produce mental "sores" that create angry emotions in the minds of those to whom the words are addressed. Anger surrounds a man with a truly pestilential atmosphere, from which it is wise for all sensitive natures to flee before they become infected.

Only those who are very callous or fortified by great love can safely expose themselves even for a little while to such an evil atmosphere. The angry person is a mentally intoxicated person. His mental digestive organ, the faculty of reason, is temporarily incapacitated and his whole mind filled with the poison of undigested or improperly digested thoughts and ideas. It is therefore useless to attempt to reason with any one while he is in this condition. No thought presented can be digested and assimilated, properly comprehend and understood until the inflamed mind has cooled and reason again become operative.

Words, whether spoken or written, have a wonderful power for good or evil because they are the symbols used by man for conveying thought from mind to mind. Words that transmit uplifting thoughts and healthful emotions are truly the "words of life," while those which rouse depressing, inhibiting, disease-inducing thoughts and emotions are as truly "words of death." How potent for death were those words of the "Lord God" addressed to father Adam after his disobedience: "Dust thou art and unto dust shalt thou return." Truly could Jehovah later declare, through the mouth of the prophet Hosea, "I have slain them by the word of my mouth." What a contrast between the mental effect produced by the condemnatory words of God and the "words of life" uttered by the Son of that same God, who declared: "He that heareth my word, and believeth on Him who sent me hath eternal life." "Death and life are in the power of the tongue."

Words have more power for evil than for good, unless they are correctly used and understood. A greater part of the suspicion, evil surmising, contention and anger manifest in mankind is the result of some misunderstanding of the written or spoken expressions of another's intentions or feelings. Truly it is the "spirit," the thought expressed by the word used, that "quickeneth."

It is, indeed, difficult for mankind to escape mental contact with disease and death inducing words and suggestions, for they abound on every side. Every doctor's sign, drug store, patent medicine advertisement, hospital, crepe-bound door, undertaker's wagon, hearse, funeral cortege and cemetery keeps the thought of disease and death continually before his mind. Every newspaper also carries its suggestions of evil in its daily record of mental, moral and physical unrighteousness. The influence of newspaper suggestion is plainly evidenced in the rapid spread of widely heralded epidemics of disease, waves of crime and suicide. Those who wish to avoid every possible means of injuring their health will do well to refuse to read as well as to refuse to listen to anything which may injure their bodies by poison-

ing their minds. The most important thing of all is that we shall think aright. Wrong thinking is the cause of all our troubles, because wrong thinking leads to wrong actions and wrong actions lead to disaster. "The thoughts of the righteous are just" but "the thoughts of the wicked are an abomination to the Lord." (Proverbs 12:5; 15:26.)

CHAPTER THIRTEEN

THE WAY TO HEALTH

"I will take sickness away from the midst of thee."—*Ex. 23:25.*

No intelligent person today believes that prayers and sacrifices offered to pagan gods and goddesses, magical rites and incantations or the wearing of charms and amulets have the power to cure disease. We know that those who recovered their health following these ancient and superstitious methods of treatment did so in spite of the treatment and not because of its power to heal, and the masses are now slowly but surely learning that the same is true of drugs. Physicians have for some time been convinced of this, as is abundantly proven by their own testimony.

What the Doctors Say About Drugs

"How rarely do our medicines do good! How often do they make our patients really worse."—Dr. Ramage, F.R.C. "Nine times out of ten our mis-called remedies are absolutely injurious to the patient."—Prof. Jameison, of Edinburgh. "The effects of our medicine upon the human system are in the highest degree uncertain."—John Mason Good, M.D.F. R.S. "All our curative agents are poisons, and as a consequence every dose diminishes the patient's vitality."—Prof. Meigs, Jefferson Medical College, Philadelphia, Pa. "In most cases our patients would be safer without a physician than with one."—Prof. A. Clark, New York City. "The administration of powerful medicines is the most fruitful cause of derangement of the digestion."—Dr. Cogswell, Boston, Mass. "We have done but little more than multiply diseases and increase their fatality."—Dr. Benjamin Rush, Philadelphia, Pa. "Every dose of medicine is a blind experiment upon the vitality of the patient."—Dr. Bostwick, author of "The History of Medicine." The older physicians grow, the more skeptical do they become of the virtues of medicine."—Prof. Stevens of the New York College of Physicians. "All medicines which enter the circulation poison the blood in the same manner as do the poisons that produce the disease."—Prof. J. M. Smith, M.D. "Medicine is a collection of uncertain prescriptions, the result of which taken collectively is far more fatal than useful to mankind. Water, air and cleanliness are the chief articles in my pharmacopia."—Dr. Covissart, Paris, France. "I charge that whereas the first duty of a physician is to instruct the people in the laws of health, and thus prevent disease, the tendency has ever been toward a conspiracy of

mystery, humbug and silence. I urge that they have encouraged superstition and humbug by the germ theory of disease. I do not question the existence of micro-organisms; but they are the result, not the cause of disease. They are scavengers; their legitimate work is to clean out the sewers of our bodies, wherever there is decay, pus, or decomposing matter; these little life savers are doing their work of neutralization, sanitation, purification; they feed upon effete and decaying animal matter; they are beneficial helpers to an important end.”—Alexander M. Ross, M.D.F.S.L., of England. “I have practiced medicine in this city for thirty years, and I state to you that I have no confidence in it. No man can tell when he gives a drug whether it will bring relief to the sufferer or hasten his death.”—Dr. R. M. Davis, Chicago, Ill.

Why does the modern physician continue to prescribe drugs?

Because the majority of his patients are not yet sufficiently enlightened to be capable of accepting the better way. The uninformed person has little faith in the physician who does not give him “something to take,” and the darker in color and the more nauseous in taste that “something” is, the greater will be his hope of recovery and the stronger his faith in the doctor. Our word “pharmacy” is derived from a Greek word that means sorcery, and a belief in magic and magical influences has gone hand in hand with drug medication since drugs were first introduced. Man is always attracted by the mystic, and he is usually always more willing to take an unknown “something” from a box or bottle than to mend his ways.

Doctor Osler, Regius Professor of Medicine at Oxford University, England, considered the highest of all medical authorities, tells us why the doctor prescribes drugs. In an article on medicine written for the *Encyclopedia Americana* he makes the following statement: “The psychical method has always played an important, though largely unrecognized, part in therapeutics. It is from faith, which buoys up the spirits, sets the blood flowing more freely and the nerves playing their part without disturbance that a large part of all cure arises. Despondency, or lack of faith, will often swing the stoutest constitution almost to death’s door; faith will enable a spoonful of water or a bread pill to do almost miracles of healing when the best medicines have been given in despair. The basis of the entire profession of medicine is faith in the doctor, his drugs and methods.”

Doctor Osler’s statement proves that the recoveries under medical treatment are as much “faith cures” as those occurring during the ministrations of the Divine Healer, Christian Science practitioner or teacher of New Thought, and it in part accounts for the cures attributed to the

charms, incantations, prayers and sacrifices used in ancient days. "According to thy faith, so shall it be unto thee." Any method that will "buoy up the spirits" of the afflicted person sufficiently to rouse his latent vitality will lead to healing. For vital energy, and vital energy alone, is the healing agent. All healing, therefore, is necessarily Divine healing, since it is wrought by a Divinely created force that operates in conformity with Divinely ordained laws. Health is lost by reason of man's transgression of the laws that govern his existence, and is to be regained only by obedience. The religious person is sometimes inclined to doubt this. When law is mentioned he thinks only of the laws given through Moses and replies that he is not living under the law but under "grace." This is true, so far as his eternal destiny is concerned, but it is not true as respects his present existence, for nothing ever happens by chance, every effect is preceded by its cause, and all things are governed and regulated by fixed and unchanging laws. These laws were ordained by the All-wise Creator of the Universe and are as perfect as Himself, therefore cannot be changed even by Himself. Prayer, therefore, has never yet, and never can cause God to change His mind or alter the operation of His laws. The Christian who asks God to heal his body while he continues the transgressions that have injured that body, or the Christian who asks God's blessing on his meal and then proceeds to break the dietetic laws ordained by that same God, has prayed in vain. God will not and cannot co-operate with him in his evil doing. "God heareth not sinners." The "prayer of faith" will "save the sick" only when they have forsaken their sins. This is the first thing required of those who seek healing in the systems that combine healing and theology. No one who believes in the existence of a Supreme Being can doubt that Being's power to impart vitality directly to the afflicted believer. In times gone by this was necessary, to prove the Divine authority of certain prophets of Jehovah, and, during the ministry of Jesus, to prove His Divine Sonship. These miracles, so-called, however, were all performed in harmony with Divine law. It is a fact well known to many that the physically weak draw upon the vitality of the physically strong when the two bodies are in contact. Aged or infirm persons sleeping with children or the healthy adult, draw upon their vitality and weaken them. For this reason the two should never sleep together. This law was known to the ancient Hebrews, as is proven by I Kings 1:1-4, where we are told that when King David was old and stricken in years he could not keep warm. "Wherefore his servants said to him, 'Let therefore be sought for my lord the king, a young virgin; and let her stand before the king, and let her cherish him, and let her lie in thy bosom, that my lord the king may get

heat.'” Elisha, the prophet, vitally strengthened by Jehovah, had but to “stretch himself upon the child,” the son of the Shunamite woman, to restore it to life, and Jesus, filled with vitality, imparted it to the woman who but touched the hem of His garment. The same law is still in force but its operation is not necessary in a day when man has been given so much knowledge of the laws that govern his existence.

Drugs are sometimes given with the thought of “assisting nature.” But nature needs no assistance. All she requires is obedience. Wasted or worn fleshy organs can be repaired only by materials of which they are composed, and only by the action of the vital force generated within the body from the elements contained in its natural foods. Any substance that does not supply the body with nutriment is a poison and must be removed at a considerable expenditure of vitality. Drugs, therefore, take life from the body instead of giving life to it. Narcotic drugs, given in small doses, act as stimulants and tonics because they rouse the latent vitality to expel them from the body; in larger doses they stop pain by temporarily killing the nerves that transmit the sensation; in still larger doses they permanently kill the entire organism. Medicines for coughs, colds and consumption usually contain some form of opium, the essential nature of which is to deaden the nerves. The sensory nerves of the bowels are deadened along with others, which produces constipation, which is relieved by the taking of a purgative or cathartic. A “dose of salts” is the remedy usually prescribed. Such bowel movements are secured at great expense to health, for in addition to the unnecessary expenditure of vital energy, the blood and lymph have been robbed of considerable water, the stomach weakened and the bowels and kidneys violently irritated. Many cases of constipation have been brought on by the action of a drug taken for some slight disorder, and continued and made chronic by the use of purgatives.

When the sick person is possessed of sufficient reserve vitality to withstand the action of the drugs taken, the fleshy mechanism may be “whipped-up” enough to cast out both the drugs and the obstructions that have caused the disease. In such cases the drugs are said to have worked a cure, and after a period of weakness termed “convalescence” the patient is often restored to his former degree of health. But drug cures often leave unpleasant after-effects called the “sequela” of the disease, a temporary or permanent weakness or disability of some part of the organism due to strain or other injury caused by the medication. Sick persons who have little reserve vitality usually die during the course of drug treatment, or during the period of convalescence—after they have been “cured” of the disease.

The well informed person must condemn the use of drugs, but this does not mean a condemnation of the modern medical doctor. He is, as a rule, an honorable and conscientious man, whose sick-room experiences, not his drugs, are invaluable. No one condemns drug medication more strongly than the progressive medical men of today, and the majority of them administer drugs only in cases where they can see no other possible means of relieving the patient. The average physician is handicapped by the ignorance of the majority of his patients as well as by the "creed" of the medical school from which he graduated. If you have a physician in whom you have confidence, never hesitate to seek his advice when you feel that you need it. But let him know that you realize the inability of drugs to cure and that you are more willing to "do something" for the benefit of your health than you are to "take something," and the advice he will give you will be worth far more than any prescription he has ever written for you. The Osteopath, Chiropractitioner and other drug-less physicians, having gotten the farthest away from drug medication, are preferred by those who have themselves most advanced in a knowledge of the laws of life, and in addition to his greater knowledge of the laws of health, the Osteopath and Chiropractitioner are capable of making those adjustments of the bony framework that are so often contributing causes to the diseased condition. No matter how much one may learn of the laws of life there will be times when he will require the advice of one whose experience is greater than his own. At such times never hesitate to consult, as the pupil consults his teacher, the physician, of any school, in whom you have the most confidence.

In fleeing from drug medication many fall into the hands of the diet "crank" or other self-styled "reformer." A long-suffering public has been amused, and considerably confused, by the multiplicity of mis-fit rules of living presented in recent years by such persons. The following warning against them was recently sounded by the United States Government.

Government Warning

"Some of the advocates of freak diets are sincere, but are themselves deluded. Others are fakers who seek monetary gain by advising peculiar systems of diet. Neither class can offer trustworthy advice.

In most of the recommendations of these self-styled 'experts' there is hardly a shadow of reason, though they may seem plausible. One of their methods of reasoning is to use isolated and often unrelated facts of science as evidence that their peculiar system is of value. They com-

pletely ignore statements in current historical and scientific literature which would negative their contentions."

All radical changes in diet should be made gradually by those who are not ill. Our present habits have been formed slowly and new ones, to be permanent, must also be formed slowly. Radical changes, when not made necessary by illness, sometimes do harm. The articles of diet generally used are, with some few exceptions, the best for man's present needs. Injury comes from the improper preparation of foods for the table and from foods wrongly combined in the stomach. The fault is not so much with the fuel we use for the human engine as with our way of using that fuel and our care of the drafts and dampers and "ash-pan" of the body. Having attained some knowledge of the laws governing these things, we are enabled to keep the fire of life burning so steadily and brightly as to keep the mechanism in good running order.

The majority of health manuals make the mistake of prescribing a certain method of living for the reader, certain diets, etc. for certain forms of disease. All such rules apply to the non-existent "average man" and are, therefore, of little use, and sometimes dangerous. No two human beings are alike situated, and the temperament, thoughts and habits of life of each individual differ in some respect from the temperament, thoughts and habits of life of the other. We do not all think exactly alike, and we do not all transgress the laws that govern our existence exactly in the same manner. For this reason it is necessary for each individual to apply the law to his own case and prescribe the remedy. He knows, better than anyone else, the nature of his own thoughts and emotions, the character of his surroundings, the nature of his work, the amount of exercise, sunlight and fresh air he secures. Studying his own case in the light of the knowledge of the laws of life presented in this volume he will see wherein he is transgressing, after which the remedy is obvious—discontinue the transgressions and seek to come into harmony with the laws that have been broken. Patience is a necessary virtue. Nature works slowly, but always surely. Many of our afflictions are the result of long years of "sinning" and the marks of our evil doing are not to be removed by a few days or even weeks or months of "righteousness." Acute conditions are, however, relieved very quickly by obedience. For the benefit of the hurried reader and the busy person, we add the following table of health commandments in which are briefly presented the leading principles set forth in the preceding pages.

Health Commandments

- 1—Avoid impure air at all times.
- 2—Avoid an excess of clothing and tight bands.
- 3—Bathe with water as often as the body requires it for cleanliness.
- 4—Take frequent sun and air baths.
- 5—Rinse the inside of the body in the morning as well as the outside.
- 6—Drink no water at mealtime unless really thirsty, not when made so by an excess of salty foods.
- 7—Avoid all stimulating beverages, drugs and patent medicines.
- 8—Eat only when there is a real craving for food, not when an inflamed stomach gives a false appetite. If you do not have a natural appetite, secure one by work or exercise.
- 9—When possible, eat the kind of food only for which the "mouth waters."
- 10—Eat no foods that are obnoxious to the eye, nose or sense of taste. Only the unlearned poison their stomach with spoiled or otherwise unfit foods that have been disguised with spices, condiments and sauces sufficiently to deceive these guardians of their health.
- 11—Remember that pickled and preserved foods are "embalmed foods" and inimical to health.
- 12—Avoid table salt and all spices.
- 13—Never eat when mentally or physically fatigued or under the influence of strong emotion.
- 14—Be cheerful at table.
- 15—Be mentally and physically quiet for a little while both before and after each meal.
- 16—Eat in quantity and kinds of foods according to your needs at the time; according to age, occupation and the temperature.
- 17—Do not eat two body-building foods at the same meal or closely enough together to permit their mixing in the stomach. The same rule applies to the heat-and-energy generating foods.
- 18—Eat slowly and masticate the food thoroughly before swallowing.
- 19—Eat fruit between meals or make a meal entirely of fruit.
- 20—Never mix acid fruits with starchy foods.
- 21—Avoid starchy foods that have been fried in fat of any kind.
- 22—Do not over-work the brain, heart, stomach, intestines or any other organ of the body.
- 23—Secure one day's rest in every seven.
- 24—Daily exercise those muscles of the body and faculties of the mind not used in your regular employment.
- 25—Walk at least a mile in the open air every day.
- 26—Live in the sunlight as much as possible but do not unduly expose yourself to the direct rays of the sun in hot weather.
- 27—Secure from six to eight hours sleep out of every twenty-four; more if needed. Sleep in a clean, well ventilated room that is used only for sleeping purposes.
- 28—Relax every muscle upon retiring for the night, and put away every anxious or unpleasant thought.
- 29—Rise from the bed when naturally awakened in the morning. Upon arising, stretch the body sufficiently to bring every muscle into play.
- 30—Avoid getting into a mental rut. Changes of thought are as beneficial as changes of exercise. Unused parts of the brain will wither as quickly as unused muscles.
- 31—Watch well your emotions. Avoid fear, worry, suspicion, anger and all other mental poisons.
- 32—Know the laws that govern your life, health and happiness, then strive to keep those laws.
- 33—Be temperate in all things.

CHAPTER FOURTEEN

OLD AGE

"His flesh shall be fresher than a child's; he shall return to the days of his youth."—Job 33:25.

Man measures his life by the clock and the calendar. With every revolution of the earth upon its axis he thinks of himself as one day older, and whenever it completes another journey around the sun he counts himself as having aged another year. If he manages to retain his footing upon the speeding sphere until sixty or seventy of these annual trips have been made he calls himself an "old" man and hastens his preparations for his return to the dust from which he came.

But what is there in either of these movements of our planet to age a man? What is there in this frictionless journey through the ether to bow his back, shrivel his muscles, carve deep furrows in his brow, dim the lustre of his eye and turn his skin to parchment? Absolutely nothing, for time is simply man's imperfect measure of an infinitesimal portion of eternity. Were we to rise a single foot above the whirling vapors of earth's atmospheres, we should find ourselves in an "eternal now" where there are neither hours nor days nor weeks nor months nor years.

It is easy to prove that the clock and calendar have nothing to do with the actual age of man. By traveling around the earth in one direction we gain an entire day upon the sun, and thus would seem to gain another day of life, while by traveling in the opposite direction we lose an entire day, yet in neither case have we lived either one day less or one day more than if we had remained at home. When Pope Gregory XIII reformed the calendar by ordering the deduction of ten days from the month of October 1582, he made all who accepted his ruling apparently ten days younger, yet no one was either more youthful or more aged than he would have been had the calendar not been changed. A modern illustration of the same principle is found in the Daylight Saving Law recently introduced into the United States. When in the spring of 1918 every clock in that nation was set forward one hour, every inhabitant of the country automatically became one hour older, according to the clock, although no one's age had been affected in the least.

Clocks and calendars have no power to "age" a man, except by their "suggestive" influence upon his mind. And in this way they do assist in causing that dread malady known as "old age;" for old age is a disease of the mind, a

disease induced partly by ignorance of the laws of life and partly by "suggestion."

That old age is altogether a disease of the mind is positively proven by the fact that no part of man except his mind can ever become really aged. It is a physiological impossibility for any part of his body to become more than seven years old. The greater portion of his physical substance is really always much younger than this, because every portion of his body except his bones is completely rebuilt and renewed every twelve months. Were it not for the influence of his thoughts and emotions, which are responsible for his dietetic and other errors, he would retain a youthful appearance as long as he should live. As it is, and long has been, his thoughts, words and deeds are continually molding the ever new material of his organism into that image of decrepitude stigmatized by the epithet "old age."

The physical characteristics of old age are chiefly the result of life-long dietetic errors and wrong methods of living. The gray hair, the parchment-like skin, the stiffened joints and powerless limbs are evidence of life-long "self-preservation" with embalming and preservative substances taken as food or with foods. Table salt, spices, vinegar, and the alcohol taken in beverages or produced by the fermentation of surplus sweet and starchy foods have worked together throughout the years to dry the blood and lymph, harden the arteries, stiffen the joints, and mummify the body. The hot, dry air of many an over-heated, poorly ventilated room has also played its part in producing that leathery skin, by robbing it of its natural oil and moisture and "curing" it as leather is cured. And that skin has for many years been "tanned" by dust and smoke and the fumes of burning oil and gas; by alkaline soaps, talcum powders, and countless "creams" and lotions. Is it any wonder that the "aged" manifest an appearance of being well "seasoned?" These characteristics of old age are the result of ignorance, a negative condition of the mind.

The furrowed brow of "age," on the other hand, is the result of a very positive condition of the mind, for those furrows are carved by emotions. Anxious thought, fear, worry, grief, regret, remorse, envy, suspicion, jealousy and anger thus mark man's ever-youthful flesh throughout the moments of his life. Those wrinkles are not a "tally" of his age, by any means, but a record of his ever-changing thoughts and experiences; a record of his own making blazoned upon his brow for all to read who can.

The muscular tissue of man's limbs can never be more than one year old, yet the muscles of the "aged" are weak and powerless. Can this be the fault of the mind? Yes, for when the clock and calendar inform man that he has reached "the arm-chair" period of his existence he begins

to curtail his usual activities and his muscles slowly atrophy for lack of use. It is not the muscles alone that suffer by this gradual retirement to the rear of life's procession. As interest in the present ceases the brain itself withers, the mind loses its former power and the man becomes a child again, "sans teeth, sans eyes, sans taste, sans everything."

Old age is a disease of the mind, and man's mind is diseased or made "old" by the influence exerted by his environment. Long married couples gradually grow to look alike because they have long been subjected to the influence exerted by like surroundings and like experiences. It is principally for the same reason that members of the same family bear a more or less striking resemblance to one another, and on a little larger scale the influences of like climate, like economic, political and religious conditions work together to produce racial resemblances. We have only to extend the application of this principle a little to discover planetary resemblances—caused by influences to which every inhabitant of the planet is more or less alike exposed.

The Edenic environment of our first parents exerted no influence that could in any way suggest the physical symptoms of "old age" or give birth to any of the baneful emotions that play so large a part in producing those symptoms. Eden was a place of eternal youth and those who dwelt there lived in perfect harmony with every law of life ordained for the preservation of their existence and youthful appearance. Provided, as they were, with everything necessary for their perfect sustenance and happiness, they could experience no anxiety, fear, worry, sorrow, suspicion or anger, but in the outer portion of the earth into which they were driven after their disobedience influences of another kind began to work upon them—the influence of hunger, heat and cold, perplexity, sorrow, fear, and the expectation of death—the planetary influences by which their descendants have been affected from that day to the present time.

Men "aged" slowly up to the time of the deluge, in spite of the physically injurious condition of their mentality, because they were not yet pickling and embalming their living bodies to the extent that afterwards became so customary. They doubtless used honey and the fermented juice of the grape, as we have seen in another chapter, but they could have had little use for other flavorings until they received the permission to eat flesh. After the flood the use of flesh foods created an ever-increasing desire for table salt and the various other condiments and stimulating beverages that have come into such general use since then; and with the increasing use of these man aged more and more rapidly, until today the man of only three score years and ten is counted as "aged" indeed. Yet such a man is but "an infant of days," because the weakest organ of his body, tested as

iron and steel are tested, exhibits a tensile strength sufficient to guarantee the performance of its natural duties for a period of one hundred years. Even at that age man would still be but a "child," since no part of his organism can ever become more than seven years old.

Since Adam's fall, planetary influences have made "old age" the common lot of all beyond a certain point in their existence, and each generation has supplied its quota of "living examples" of the malady to serve as suggestive patterns for the generation that follows. Every time the red-lipped, rosy-cheeked child looks up into aged grandfather's seamed and withered face it is impressed with the suggested thought and fear that it, too, will look like this if it should live as many years. This thought and fear has been expressed by every child in the seriously asked question: "Grand-dad, will I look like you when I am old?" Grandfather's reply necessarily deepens the impression already made upon the mind of the child, an impression that becomes permanently "fixed" in later years by the admonitions of parents and public instructors that youths prepare for the time when they shall no longer be capable of providing for themselves.

The cumulative effect of those long continued and oft repeated "suggestions" usually manifests itself for the first time about the age of forty, at which time the man or woman is suddenly stricken by the realization that they have at last "reached the top of the hill" of life and must henceforth travel the path leading down into the valley of senility, helplessness and oblivion. And with this realization comes the first great fear of "old age"—a fear that hastens the one who fears still more rapidly along the course to the consummation they dread—"For as a man thinketh in his heart, so is he"—"And according to thy faith, so shall it be unto thee."

Old age is a preventable and curable disease, but not, as men once thought, by some "elixir" brewed by the alchemist or the waters of a long sought "fountain of eternal youth." Neither can it be prevented or cured, as some men now think, by drinking large quantities of sour milk or eliminating a portion of the lower intestine, for "old age" is a disease of the mind and it can be prevented and cured only through the mind.

The first requisite to the prevention or cure of this malady is that a man shall have faith, faith in the promise that heads this chapter and in the evidences that follow that promise. For without such faith no man will do the things necessary to effect a cure. Faith in his accustomed mode of living, and in the suggested certainty of physical decrepitude after a certain number of years, have inevitably led man toward "old age;" and the same degree of faith in

the possibility of retaining or regaining his youth by correct thinking and living will as surely lead him away from it.

The obvious preventative of old age is to learn to live in harmony with the laws of life and keep the mind ever as youthful as the body, never more than seven years old. This does not mean a continuous change in the character of one's thinking, if our thoughts are of the right character, but a continuous renewal, refreshment and exercise of every truly beneficial and upbuilding thought. It is not sufficient to simply keep alive the memory of past proper enjoyments, they must be kept ever youthful by frequent repetition and by the addition of as many new proper experiences as the advancement of human knowledge makes possible. Anxiety, worry, grief and fear, pride, envy, jealousy, suspicion and anger are the "germs" of old age,, and must be replaced by faith, love, joy and all the upbuilding emotions before a "cure" can be effected; for while we may easily add a century or more to the span of our existence by temperate living, we shall not escape the physical characteristics of old age unless we are also temperate in our thinking.

Many in the past have reached an extreme length of life, compared to the average, by abstemious living. During the period extending from the year 66 A. D. to the year 1799 A. D. one thousand seven hundred and twelve persons reached an age of one hundred years and over. Arsenius, one of the early Christian hermits, lived 120 years, and Kentgern, called St. Mungo, lived to the age of 185. Other long-lived persons were Thomas Parr, who married the second time at the age of 120 and lived to be 152; Jergen Douglass, a carpenter, who lived to the age of 120; Maria Williamo, a peasant woman, to the age of 115; and J. Bailies, who lived for 128 years. It is said that many of the frugal living, temperate Arabs of the desert live to be more than 200 years old. All statistics show, however, that no passionate person, drunkard or heavy eater has ever lived to an advanced age.

Buffon, the famous French scientist, long ago declared that man, like the lower animals, should live seven times as long as it takes him to mature. In Buffon's days it was thought man reached maturity at the age of twenty and he, therefore, fixed the natural age of man under existing conditions as 140 years. Since Buffon's day it has been learned, in harmony with the Mosaic law, that man does not reach the full limit of his growth until the age of 30. Therefore, if man were to live as temperately in his unfavorable environment as the lower animals do in theirs he should reach an age of at least seven times thirty or 210 years. That in most cases he dies more than a century and a half younger than this is a positive proof of his great intemperance along every line.

Vital statistics show that the "natural expectation of life" has constantly increased with the increased improvement of man's environment and his increased knowledge of the laws that govern his existence. In the sixteenth century the natural expectation of life was little more than 21 years, in the beginning of this twentieth century it had risen to fifty years. This average length of life is growing higher with each succeeding year, in keeping with the rapid increase in knowledge and increasing opportunities for obedience. The scientist has long realized the theoretical possibility of eternal human existence and perpetual youth, and as knowledge and opportunity increases it becomes more and more possible to turn theory into practice.

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